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CATALOGUE

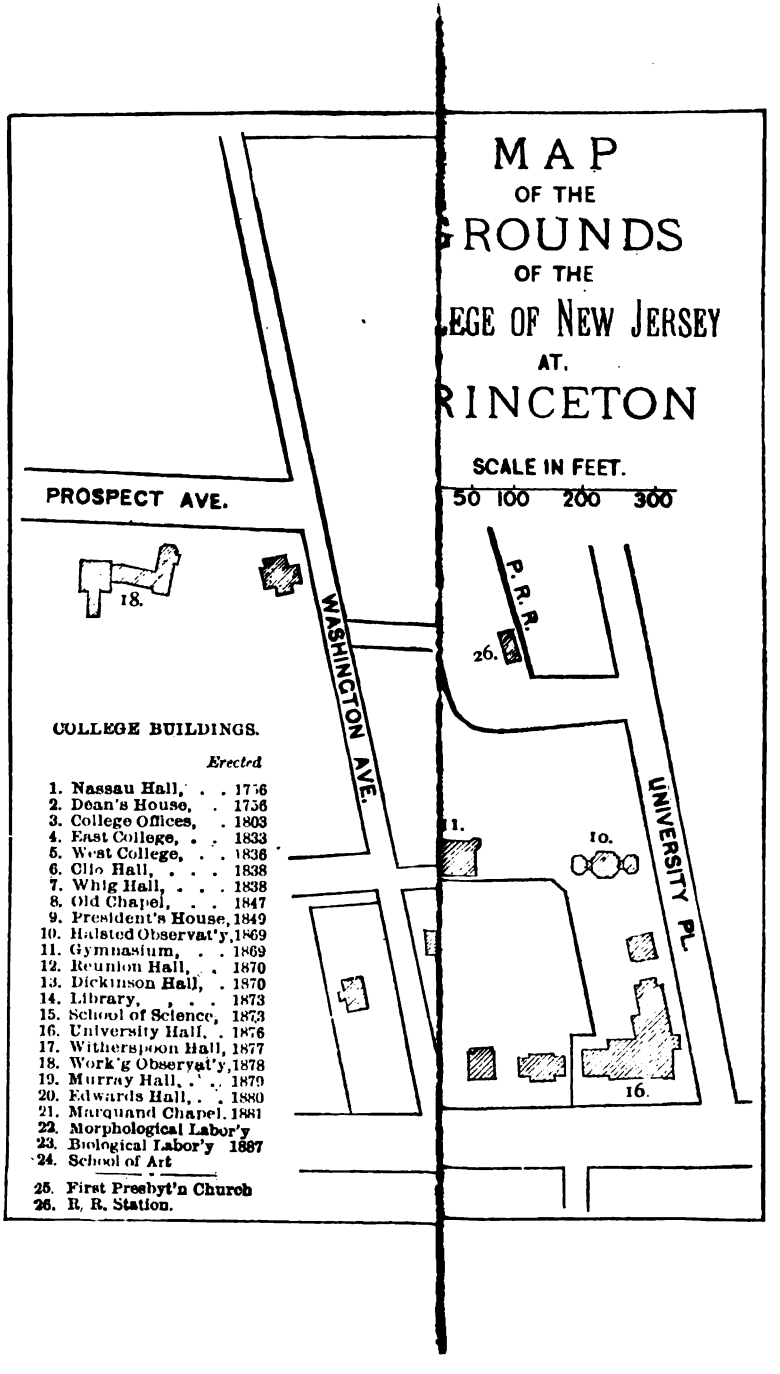
OF THE

COLLEGE OF NEW JERSEY

AT

PRINCETON

1888-89


MAP
OF THE
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AT.
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COLLEGE BUILDINGS.
Erected
1. Nassau Hall, . . 1756
2. Dean's House, . 1756
3. College Offices, . 1803
4. East College, . . 1833
5. West College, . . 1836
6. Clio Hall, . . . 1838
7. Whig Hall, . . . 1838
8. Old Chapel, . . 1847
9. President's House, 1849
10. Halsted Observat'y, 1869
11. Gymnasium, . . 1869
12. Reunion Hall, . . 1870
13. Dickinson Hall, . 1870
14. Library, . . . 1873
15. School of Science, 1873
16. University Hall, . 1876
17. Witherspoon Hall, 1877
18. Work'g Observat'y, 1878
19. Murray Hall, . . 1879
20. Edwards Hall, . . 1880
21. Marquand Chapel, 1881
22. Morphological Labor'y
23. Biological Labor'y 1887
24. School of Art
25. First Presbyt'n Church
26. R. R. Station.

CATALOGUE

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OF THE

COLLEGE OF NEW JERSEY

AT

PRINCETON

ONE HUNDRED AND FORTY-SECOND YEAR

1888-89.

The Princeton Press.

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CALENDAR.

1888.

Sept. 11–12.	Examinations for admission, in Princeton only.
Sept. 12.	First term begins—College assembles at 3 P. M. in Marquand Chapel.
Sept. 13.	Conditioned and unexamined students assemble in the Old Chapel at 10 A. M.
Sept. 26.	Preliminary examinations for University degrees.
Nov. 8.	Stated Meeting of the Board of Trustees.
Nov. 28–Dec. 3.	Thanksgiving recess.
Dec. 10–19.	Examinations. End of first term.
Dec. 19–Jan. 2.	Christmas vacation.

1889.

Jan. 2.	Second term begins.
Jan. 31.	Day of Prayer for Colleges.
Feb. 14.	Stated Meeting of the Board of Trustees.
Feb. 22.	Washington's Birthday—Exercises in University Hall.
April 10.	End of second term.
April 10–17.	Spring vacation.
April 17.	Third term begins.
May 15.	Last day for renewing room agreements for '89–90.
May 22–June 1.	Senior final examinations.
June 1.	Annual allotment of rooms.
June 5–15.	Examinations of the three lower classes.
June 16.	Baccalaureate Sunday.
June 17.	Class Day—Junior Orations, 7:30 P. M.
June 18.	Reading of Theses by Scientific students—Annual Meetings of Literary Societies and Alumni Association—Lynde Prize Debate, 7:30 P. M.
June 19.	142nd Annual Commencement.
June 17–19.	Commencement Meeting of Board of Trustees.
June 20–21.	Examinations for admission, held simultaneously in Princeton and Western cities.
June 21–Sept. 10.	Long vacation.
Sept. 10–11.	Examinations for admission, and on entrance conditions, in Princeton only.
Sept. 11.	First term begins—College assembles at 3 P. M. in Marquand Chapel.

Sept. 12. Conditioned and unexamined students (not candidates for entrance) assemble in the Old Chapel at 10 A. M.

Sept. 25. Preliminary examinations for University degrees.

Nov. 14. Stated Meeting of the Board of Trustees.

Nov. 27–Dec. 2. Thanksgiving recess.

Dec. 9–18. Examinations. End of first term.

Dec. 18–Jan. 2. Christmas vacation.

1888.

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1889.

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	29	30	31				

THE COLLEGE OF NEW JERSEY.

The College originated by Royal Charter under President Dickinson in 1746. A second more ample charter was granted in 1748. After the war of the Revolution, the charter was confirmed and renewed by the Legislature of New Jersey.

The College embraces a Board of Trustees and a Faculty of Instruction with certain additional officers employed in the administration of affairs. The undergraduate Societies and Alumni Associations, though not strictly parts of the organization of the College, are fostered by it, and coöperate with it.

The Corporation is styled "The Trustees of the College of New Jersey." By its charter it holds and administers the property of the College, appoints the President and Faculty, makes laws for the government of the institution, and confers the degrees. The Board is a self-perpetuating body, composed of twenty-seven members, with the Governor of the State as President *ex-officio*, or, in his absence, the President of the College.

The Faculty, consisting of the President, the Dean, the Professors and Tutors, conducts the instruction and discipline of the College, aided by Instructors and Lecturers.

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Registrar.

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Superintendent of Gymnasium.

MATTHEW GOLDIE,
Proctor.

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3. *Sanitary*—Chairman—THE DEAN.
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   Secretary—PROF. WEST.
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Secretary—PROF. WINANS.

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Secretary—PROF. ROCKWOOD.

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Secretary—PROF. SLOANE.

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Secretary—PROF. WESTCOTT.

On the Part of the Students.—Chairman—R. E. SPEER.
Secretary—J. J. CHARLTON.

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2. Juniors, PROF. DUFFIELD.
3. Sophomores, PROF. PACKARD.
4. Freshmen, Div. I and II, PROF. FINE.
Div. III and IV, PROF. WINANS.

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2. Seniors, Juniors and Sophomores, C. E., PROF. MCMILLAN.
3. Freshmen, PROF. ROCKWOOD.

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HUGH TROWBRIDGE DOBBINS, A.B., ... *Princeton.*

Fellow in Classical Literature.

WILLIAM HENRY RUNYON, A.B., ... *Princeton.*

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2. The President. *Ethics.*
3. Prof. Ormond. *History of Philosophy, Logic and Psychology.*
4. Profs. Scott and Osborn. *Physiological Psychology.*
5. Prof. Shields. *Harmony of Science and Religion.*
6. Prof. Sloane. *History and Political Science.*
7. Prof. Johnston. *Jurisprudence and Political Economy.*
8. Profs. Prime, Marquand and Frothingham. *History of Art and Archæology.*
9. Prof. West. *Pedagogics.*

II. Department of Language and Literature.

1. Profs. Cameron, Orris and Winans. *Greek.*
2. Profs. Packard, West and Mr. Roddy. *Latin.*
3. Profs. Murray, Hunt, Raymond and Mr. Miller. *English.*
4. Profs. Kargé and Westcott. *French and German.*
5. Prof. Hunt. *Anglo-Saxon and Early English.*
6. Prof. Winans. *Sanskrit.*

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2. PROF. YOUNG AND MR. REED. *Astronomy.*
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6. PROF. MACLOSKIE. *Botany.*
7. PROF. LIBBEY. *Histology and Physical Geography.*
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ADMISSION.

ENTRANCE EXAMINATIONS.

All entering students on their arrival must report at the President's house, and register. Examinations for admission will be written, with supplementary oral examinations if needed. The first examination will commence in Princeton, on Thursday, June 20th, at 11 A. M., and continue through the afternoon of Friday. The second will commence on Tuesday, September 10th, at 11 A. M., and continue through the afternoon of Wednesday. Applicants who have any conditions or other deficiencies from the June examination are required to remove them at this time. *Attendance is required at the beginning of the examinations.*

Simultaneously with the June entrance examinations in Princeton, examinations will also be held in the following cities, viz: Pittsburgh, Cincinnati, Louisville, Chicago, St. Louis, Omaha, Denver, San Francisco; and at preparatory schools and other cities when necessary. The precise places in which the examinations are to be held can be learned by application to the President. Due notice of these examinations will also be published in leading local newspapers for several weeks in advance.

Examinations at other times and places than those specified are inconvenient and often impracticable, and applicants for examination at other than the regular days are required to pay $10 into the treasury.

SUBJECTS.

Candidates for admission to the Freshman class are examined in the following books and subjects. It is recommended that the candidates be prepared for examination on the requirements as specified; but equivalents will be accepted.

English.

English Grammar—Whitney, or Reed and Kellogg (Higher Lessons); Modern Geography—Guyot's Grammar-School Geography; U. S. History—Anderson's or Johnston's.

The writing of a short essay is required as a part of the examination; the theme for the essay of 1889 will be based on the life of Bryant or of Poe.

The attention of preparatory schools is called to the need of a more thorough study of elementary English.

Latin.

Latin Grammar; especially the inflections; the simpler rules for composition and derivation of words; syntax of cases and verbs and structure of the sentence in general, with particular regard to relative and conditional sentences, indirect discourse and the subjunctive; so much prosody as relates to accent, quantity, versification in general, and dactylic hexameter. Cæsar (five books of the Commentaries); Sallust (Catiline or Jugurtha); Virgil (six books of the Æneid); Cicero's Select Orations (six); Arnold's Latin Prose Composition (twelve chapters),or Jones' Exercises in Latin Prose; Geography of Ancient Italy.

Greek.

Greek Grammar, including prosody; Xenophon (four books of the Anabasis), or Greek Reader (Goodwin's), 111 pages; Homer (the first two books of the Iliad, except the Catalogue of Ships); Greek composition (Jones' Exercises in Greek Prose, or an equivalent—writing with the accents required); Geography of Ancient Greece and Asia Minor. Goodwin's Grammar is preferred. Special stress is laid upon a thorough knowledge of the noun and verb inflections. Candidates will do well to read an additional book of the Iliad, where this can be done without sacrifice of thoroughness in the formal requisitions. Some experience in giving written answers to set questions is advantageous.

The Continental pronunciation of the vowels and diphthongs is preferred in both Latin and Greek.

Mathematics.

Arithmetic, including the Metric system; Algebra, through quadratic equations involving two unknown quantities—including radicals, and fractional and negative exponents; Geometry, the first and second books of Euclid, or an equivalent—that is, the propositions in other text-books relating to the straight line and rectilinear figures, not involving ratio and proportion.

PRELIMINARY EXAMINATIONS.

At the examinations in June and September, candidates intending to enter the Freshman class one year later are admitted, on request, to examination on a portion of the subjects required for entrance. Unless in exceptional cases, either two of the four general subjects, English, Mathematics, Latin, Greek, must be offered entire: or such parts of at least three subjects as are here prescribed, viz.: in *English*, Grammar and Geography; in *Mathematics*, Arithmetic, with the Metric system, and either Algebra, through simple equations of two unknown quantities, or the first and second books of Euclid; in *Latin*, the full amount in Cæsar and one other author, with Grammar; in *Greek*, three books of the Anabasis, with Grammar.

In both Latin and Greek Grammar the examination will be upon noun and verb inflections, syntax of nouns and the simpler rules for syntax of verbs. This examination will be partial only, to be completed the following year.

Applications for preliminary examination should be made to the President, with a statement of the subjects and amount offered, at least two weeks previous to the examination.

OTHER REQUIREMENTS.

Candidates for admission to the Sophomore class who have not completed the studies of the Freshman year at another College must first pass an examination on the studies required for admission to the Freshman class.

Candidates for admission to the Sophomore, Junior or Senior class, coming from another College, are examined only in the studies

of the year preceding that which they wish to enter, provided they present evidence that they have passed satisfactory examinations on the previous studies of the curriculum and entrance requirements, or their equivalents, excepting French, Anatomy, Botany and Zoology. Some knowledge of the studies just mentioned is desirable but is not required.

No person is admitted to the College as a candidate for the degree of Bachelor of Arts after the beginning of the first term of the Senior year.

All candidates for admission to any class, or as special students, must bring with them testimonials of good moral character and attainments, preferably from their last instructors; and if the candidate has been a member of another college or university, he must produce a certificate from its President or Faculty that he is free from censure in that institution.

No candidate is admitted into the College without examination and a vote of the Faculty.

Immediately after the opening of the College the entering students meet according to announcement for the registration of their names and subscription to the following pledge, required by the Board of Trustees:

We, the undersigned, do individually for ourselves promise, without any mental reservation, that we will have no connection whatever with any secret society, nor be present at the meetings of any secret society in this or any other college so long as we are members of the College of New Jersey; it being understood that this promise has no reference to the American Whig and Cliosophic Societies. We also declare that we regard ourselves bound to keep this promise and on no account whatever to violate it.

ADMISSION TO SPECIAL COURSES.

In exceptional cases, undergraduate students, not members of any one of the four regular classes nor candidates for a degree, are admitted to the privileges of the College, and allowed to take special courses, selected under the direction of the Faculty, in such a manner as to secure full and profitable employment of their time. Such special students undergo a preliminary examination sufficient to ascertain their preparation for the course proposed, and are subject

to the same regulations and discipline and to the same examinations in the studies pursued, as other undergraduates. On completing their course they receive certificates of proficiency. These special courses, however, are not offered to those who have failed in the regular course.

UNDERGRADUATE COURSE OF STUDY.

The course for the degree of Bachelor of Arts extends through four academic years and embraces instruction in the three departments of Philosophy, Language and Literature, Mathematics and Natural Science.

It includes two classes of studies, the required and the elective. The required studies are regarded as fundamental and essential in a liberal education and therefore are not left to the student's option. The elective studies, though important, are not all indispensable and accordingly are left, within definite limits, to the student's choice. Attendance upon all elective studies, when once chosen, as well as upon all required studies, is obligatory. In connection with some departments there are also optional courses, with voluntary attendance.

All the studies of Freshman and Sophomore years are required, and include History, Greek, Latin, Modern Languages, Rhetoric and English Language, Mathematics and Natural History.

From the opening of Junior year onward the student, by availing himself of the elective system, may to a certain extent shape his course with reference to his individual tastes and the profession which he has in view. About two-thirds of the schedule time of the Junior year is given to the required studies, which are Psychology and Logic, English Literature, Physics, Oratory. In addition to this, students are required to pursue three elective studies, to be selected from the following: Philosophy of History, Greek, Latin, German, Anglo-Saxon, Mathematics, Physical Geography.

In Senior year the range of elective studies is wider, required studies occupying less than two-thirds of the time. The required studies are Science and Religion, Ethics, Jurisprudence and Political Economy, Astronomy, Chemistry, Geology, English (Essays),

Oratory. The Senior elective studies are offered in three groups to assist the choice of students who desire to concentrate their elective work in the Department of Philosophy, of Literature, or of Science, but no student is required to restrict his choice to any group. The Seniors take either six or seven hours a week elective work, making their election from the following list: *In Philosophy*—History of Philosophy, Metaphysics, Science and Religion, Comparative Politics, International and Constitutional Law, Physiological Psychology, Pedagogics, Archæology, History of Art; *In Literature*—English Literature, Greek, Latin, French, German, Sanskrit; *In Science*—Mathematics, Practical Astronomy, Physics, Applied Chemistry, Laboratory Chemistry, Biology or Palæontology, Histology.

Students are required to choose their elective studies for the first term at the beginning of that term, and no changes will be allowed after the close of the third week, and none before that time, except for special reasons approved by the Faculty.

Students are required to hand in writing to the Registrar, on or before the first Monday in December, their choice of elective studies for the ensuing second and third terms, and no changes will be allowed after that date, except for special reasons approved by the Faculty.

If a student be in the Sixth Group in any department he shall have liberty to choose his elective studies only in departments in which his previous standing has been above the Sixth Group. If he desires any other elective studies he shall send in his proposed list of such studies to the Faculty for approval, and if his choice be not approved, the Faculty shall assign him his course of study.

Optional courses, so ordered as not to conflict with the time allotted to the regular instruction of the course, are offered in connection with several departments, under such restrictions as may be prescribed by the Faculty. These courses are designed to benefit those who wish to extend their reading or study in certain branches; they amplify the subjects taken up in the regular course, and in some cases conclude with a special examination upon which is based a certificate of proficiency. A student may take not more than two optional courses at one time; and only one course, if that course occupies more than two hours weekly.

The Freshman class and to some extent the Sophomore class recite in divisions constituted according to rank in order to proportion the work to individual ability; rapid progress can thus be made by those who have special aptitudes for certain studies.

In awarding the Bachelor's degree and assigning the final rank, the student's work for the whole four years is taken into account.

The following is a statement of the various courses of instruction in the three academic departments:

DEPARTMENT OF PHILOSOPHY.

Mrs. Robert L. Stuart, of New York, gave to the College one hundred and fifty-four thousand dollars, to maintain professorships in the Department of Philosophy, embracing Ethics, Logic, Metaphysics, History of Philosophy and Psychology. She gave this in memory of her husband, the late Mr. Robert L. Stuart, and of his brother, the late Mr. Alexander Stuart.

The Professorships now established on this foundation are those of Psychology and History of Philosophy, Ethics, and Mental Science and Logic.

Besides the undergraduate courses given below, the Department also embraces the courses on Contemporary Philosophy, Plato, and other subjects mentioned in connection with the graduate courses.

Metaphysics.

THE EX-PRESIDENT.

This is a two hour elective course in the first term of the Senior year. Of each hour ten minutes are given to dictation and the rest of the time to an explanatory lecture. Metaphysics is defined as the science of first or fundamental truths. The tests of such truth are self-evidence, necessity and catholicity. They are presented under three aspects: perceptions, regulative principles and generalized maxims. They are divided into intellectual and moral and are subdivided into primitive cognitions, primitive beliefs and primitive

judgments. Throughout there are historical and critical notices of opinion. The relation of Metaphysics to Theology and the other sciences is fully discussed. Realism is defended as opposed to Idealism and Agnosticism.

Psychology.

PROFESSOR ORMOND.

Psychology is a required study occupying two hours a week during the first half of Junior year. The subject is treated in two main divisions entitled the Cognitive and Motive Powers. McCosh's Treatises on the Cognitive and Motive Powers are used as text-books. Half the time is given to lectures and the instruction is accompanied with frequent recitations.

Physiological Psychology.

PROFESSORS OSBORN AND SCOTT.

This is an elective course for the Seniors, consisting of twenty lectures and demonstrations, occupying two hours a week during the first term. It is designed to give a general knowledge of the anatomy and physiology of the nervous system, especially in their relation to current German, French and English researches upon the localization of functions in the brain.

Professor Osborn opens the course with alternate lectures and demonstrations upon the general structure of the nervous system, including nerves and nerve cells, the sense organs, the brain and the principal motor and sensory nerve tracts in the brain and spinal cord. The demonstrations accompany a laboratory course of practical study and dissection of the brain and examination of microscopic preparations. Professor Scott continues the subject with lectures upon the physiology of the nervous system, including the general problems of the origin and transmission of nervous force and the functions of the peripheral nerves, spinal cord and brain. The different theories of the localization of functions in the cerebral cortex are discussed. Experiments illustrating nerve action of different kinds accompany this portion of the course.

History of Philosophy.

PROFESSOR ORMOND.

This is an elective course in the second and third terms of Senior year, occupying two hours a week. The topics discussed are: I. The ancient Greek and Roman philosophies, including the Pre-Socratic schools; Socrates, Plato and Aristotle; and the Academic, Peripatetic, Epicurean and Stoic sects. Zeller's Greek Philosophy is used as a text-book. II. Modern philosophy from Bacon to the present time, embracing Bacon, Descartes, Spinoza, Locke, Leibnitz, Berkeley, Hume, Reid, Kant, Hamilton and others. Modern philosophy is taught exclusively by lecture accompanied with recitations and discussions.

Science and Religion.

PROFESSOR SHIELDS.

The study of the Harmony of Science and Religion extends through the second and third terms of the Senior year, and includes both a required and an elective course. The required course embraces (1) the harmony of the physical sciences with natural theology; the Divine Being and attributes as illustrated by astronomy, geology and anthropology; (2) the harmony of the mental sciences with natural religion; the doctrine of a future life, divine government and probation as reconcilable with physical, ethical and metaphysical theories; (3) the harmony of science with revealed religion; the miraculous, prophetic, historical, and philosophical evidences of Christianity, and its consistency with the whole system of the physical and psychical sciences.

The elective course embraces the study of the sciences as connected with revealed religion; their history, classification and methods; normal and existing relations of reason and revelation; emerging religious controversies in the different sciences, the problem of their adjustment, and the issuing philosophical system.

While the required course aims to present the essential Christian evidences as usually taught in colleges, the elective course may also have the incidental effect of promoting that sound ultimate philosophy which results from the harmony of science and revela-

tion and looks forward to the gradual purification and completion of human knowledge.

In the elective course the instruction is given entirely by lectures. In the required course Butler's Analogy is used as a text-book with occasional lectures, and monthly reviews and extemporaneous essays take the place of a final examination.

Logic.

PROFESSOR ORMOND.

Logic is required in the last half of Junior year. (1) Deductive Logic—comprising the laws of discursive thought as implied in notions, judgments and reasonings. The syllogism and other forms of reasoning are discussed. Text-book, McCosh's Manual of Logic. Text-book instruction is accompanied with lectures and practical exercises. (2) Inductive Logic—treating of the principles and laws of induction, the canons of investigation and kindred topics. It is taught by lectures and practical exercises with references for collateral reading.

Ethics.

THE PRESIDENT.

This is one of the required studies of the Senior year. Two hours a week are devoted to it during the first term and one hour during the second term. Instruction is given by lectures accompanied by the use of Calderwood's Handbook of Moral Philosophy as a text-book. The lectures deal with both Theoretical and Practical Ethics and embrace such topics as the foundation of moral obligation, the will, conscience, the nature of virtue, and the moral law. Special attention is given to recent ethical discussions, and portions of representative ethical treatises are recommended for collateral reading.

Philosophy of History and Political Science.

PROFESSOR SLOANE.

I. *Sophomore Class.* Two exercises a week throughout the first term, required. Outlines of Universal History. Freeman's

General Sketch of History is used as a text-book. Lectures, narratives and discussions are introduced as occasion requires.

II. *Junior Class.* Two exercises a week throughout the year, elective. Lectures and recitations on transitional epochs of history, with special reference to the science of politics and the progress of civilization.

III. *Senior Class.* Two exercises a week throughout the first term, elective. Lectures and recitations on (1) The rise and growth of European Colonies in North America and the causes of the War of Independence; (2) Comparative Politics from the standpoint of American institutions.

IV. *Graduate Course.* One exercise a week throughout the second and third terms. Parliamentary and Congressional Government.

Jurisprudence and Political Economy.

PROFESSOR JOHNSTON.

I. REQUIRED COURSE. The Senior class has for two hours a week throughout the first and second terms a course in the Philosophy of Public Law in its connection with the material interests of the State; and in Political Economy, covering the historical development of the science, in all its phases and schools. Instruction in both branches of the course is by lecture, but some chapters of Pollock's History of the Science of Politics are used as a text-book in Jurisprudence, and Walker's Political Economy will be used as a text-book in that branch.

II. ELECTIVE COURSE. The Senior class has for two hours a week throughout the second and third terms a course in International and Constitutional Law, covering the three following subdivisions: (1) International Law, from the Peace of Westphalia to the Treaty of Berlin; text-book, Gallaudet's Manual of International Law; (2) the Constitutional Law of the United States, by lecture, including also the provisions of the State systems, so far as they are necessary to explain the Federal system; (3) the Political History of the United States since 1787; text-book, Johnston's History of American Politics.

III. GRADUATE COURSE IN COMMON LAW. A course in the elements of the English Common Law is open to graduates in the second and third terms. The first and third books of Blackstone's Commentaries are used as a text-book.

IV. OPTIONAL COURSES. (1) ROMAN LAW. An optional course of lectures on Roman Law, with Morey's Outlines of Roman Law as a text-book, is given to the Senior class during the first term; and Professor Packard continues and completes it by reading the Institutes of Justinian with the class during the second term. (2) ADVANCED POLITICAL HISTORY. During the third term an optional class of Seniors will read a volume of Von Holst's Constitutional History of the United States, with Professor Johnston.

Pedagogics.

PROFESSOR WEST.

This is an elective course in the Senior year, and occupies two hours weekly in the second and third terms. It consists of lectures supplemented by text-book instruction, and develops the subject in its historical, theoretical and practical relations. A thesis is required at the end of the course.

SCHOOL OF ART.

PROFESSORS PRIME, MARQUAND AND FROTHINGHAM.

This department aims to establish a museum and to furnish instruction in the History of Art and Archæology.

I. Public Lectures:

Provision will be made for a short course during the second term.

II. Graduate Courses:

(1) Prof. Frothingham lectures once a week during the first term on the life of the ancients.

(2) Prof. Marquand will conduct a private class in Greek architecture.

III. Senior Electives:

(1) Prof. Frothingham, on ancient archæology; two exercises a week during the first term.

(2) Prof. Marquand, on the history of Christian architecture; two exercises a week during second and third terms.

IV. Junior Optional:

(1) Prof. Marquand lectures on Greek mythology in art, once a week during the first term.

DEPARTMENT OF LANGUAGE AND LITERATURE.

Greek.

PROFESSORS CAMERON, ORRIS, AND WINANS.

Freshman Year.

The Freshman class is divided into four sections, each of which receives five hours of instruction in Greek every week during the first term, and four hours a week during the second and third.

POETRY.—Homer: The Iliad, Books XVI., XVIII., XXII.; Epic forms and syntax; prosody and scanning; the Homeric question; antiquities and mythology. Two exercises a week during the first and second terms, and one during the third, by Professor Cameron.

PROSE.—The Greek Historians: varied selections from Herodotus, Thucydides, and Xenophon, made with an aim to illustrate the best style of the author, and likewise, as far as practicable, to present thus from the original sources the history of the most interesting and important epochs,—the rise of the Persian monarchy, the Persian wars, Athens under Pericles, opening and closing scenes in the Peloponnesian war, the downfall of Athens. This is followed by a short course of outlines of Greek history, in English, intended to review and supplement the previous course and to furnish a comprehensive view of the whole subject. The class is trained in reading at sight, and with the advanced sections a considerable amount of Herodotus is thus read.

Xenophon's Symposium is read in the third term, with sight reading of sections from the Œconomicus; accompanied also by talks on Greek domestic life.

Also, throughout the year, review of Greek grammar, with elucidations; review of elementary Greek prose composition with written exercises, followed by advanced Greek prose (Sidgwick's). Three exercises a week in first term, two in second term and three in third term, by Professor Winans.

NOTE.—As the authors and the amount read during the Freshman year may vary from year to year, the following is indicated as a *minimum* for applicants for Sophomore standing: Homer, books XVI., XVIII., XXII.; Greek historians, 100 pages, selected at pleasure, one-half to be from Herodotus or Thucydides.

Sophomore Year.

The Sophomore class is divided into two sections, each of which receives four hours of instruction in Greek every week during the first and second terms; three hours during the third.

GREEK ORATORY.—The Olynthiacs and Philippics of Demosthenes; Demosthenes and the political condition of Greece in his time. The Rhetoric of Aristotle, Book III., with analysis and comments; Greek prose composition on the basis of the text of Demosthenes, including analyses in Greek of the Olynthiacs and Philippics; dictations on Greek lexicology, stating and explaining the laws pertaining to the formation, derivation and definition of the words of the language. The first half of the class recites in two subdivisions, each subdivision four hours a week during the first term; the second half in two subdivisions, each four hours a week during the second term and three hours a week during the third term, to Professor Orris.

POETRY.—Euripides: the Medea. The origin of tragedy; analysis of the Medea; life of Euripides. The second half of the class recites two hours a week during the first term, the first half two hours a week during the second term and three hours a week during the third term to Professor Cameron.

PROSE.—Xenophon: the Memorabilia. A selection is made of the more interesting parts of the memoirs, especially of such as are

important to subsequent philosophical study. While these parts are read carefully, it is found practicable to read at sight most of what is left. Such general subjects are treated as the life of Xenophon; review of his works; his relations to Socrates as pupil and biographer; review of the political history of the period; the Socratic system of ethics; the method and influence of Socrates as a teacher. Selections from Lucian; society, religion and literature of the second century, A. D. The second half of the class recites two hours a week during the first term, and the first half two hours a week during the second term to Professor Winans.

Junior Year.

ELECTIVE GREEK.—Attic tragedy: Æschylus—selected dramas. Lectures on the works of Æschylus, and on the origin, character and relations to modern literature of the Attic drama. Two hours a week for half the year. Professor Orris.

Aristophanes. Ordinarily one play is read critically, another more rapidly. The following are some of the collateral subjects treated by lecture, with references to various text-books: the Dionysus myth and worship; the development and history of comedy; a review of Aristophanes' extant works and the fragments; Aristophanes' literary criticisms, and his attitude toward the philosophical, social and political movements of his time; the presentation of comedies; the metres of comedy. Thucydides, Plutarch, Lucian, may be introduced either as a special course, or to furnish material for sight-reading. Two hours a week during the second and third terms of the current year, during the first term of next year. Professor Winans.

OPTIONAL.—Lyric poetry, or advanced Greek prose composition. Professor Orris.

Senior Year.

ELECTIVE GREEK.—Tragedy: Sophocles. The Œdipus Tyrannus. Criticism of the play, the plot, the significance of the tragedy. Description of the Greek theatre. Lectures on the physical geography of Greece as affecting the character and language of the people; the origin of the Greek alphabet; the characteristics of the Greek

language: rise and character of Greek literature; epic poetry; lyric poetry; history; tragedy; comedy; oratory; philosophy; Greek antiquities; manners and customs; remains of cities and buildings. Two hours a week second and third terms. Professor Cameron.

Greek Philosophy.—Plato; selected dialogues. Lectures on the philosophy of Plato; on Greek literature and philology; on the theories of the origin of language, and on the causes which underlie and determine dialectic varieties. Two hours a week first term. Professor Orris.

Optional.—Theocritus, with a review of his relations to subsequent poetry. Professor Orris.

School at Athens.

This College, in connection with others, assisted in establishing and contributes to the support of the American School of Classical Studies at Athens. This school affords facilities for archæological and classical investigation and study in Greece, and approved graduates of this College are entitled to all its advantages free of tuition. Professor Sloane represents Princeton in its Managing Committee.

Latin.

Professors Packard and West and Mr. Roddy.

Instruction given in the Department of Latin Language and Literature and Science of Language involves,

First—The constant training of classes in the etymology and syntax of the language, and in the power to translate it accurately and fluently into idiomatic English.

Second—Instruction in Latin prose composition. The object here aimed at is not facility in writing Latin as an accomplishment, but rather the acquisition of power to translate at sight any ordinary Latin into fluent literary English and to think easily in the Latin order of thought.

In the Freshman year written exercises form the basis of instruction. These exercises are examined in order to leave no errors uncorrected. Practice in extemporaneous composition, both oral and written, is continually attempted on as extensive a scale as the

student's grammatical knowledge permits. Thematic composition, in its higher forms, is reserved for later optional study.

Third—The reading and interpretation of particular authors, whether literary or historical, or both combined. This implies, as collateral branches of study, the history of Roman literature and the archæology of Roman life, social and political. Roman history is studied in its three leading periods; first, in connection with portions of Livy's Histories, the early history down to the times of the Gracchi; second, in connection with Cicero's Letters, the period from the Gracchi to the Empire; and, third, in connection with Juvenal's Satires and Pliny's Letters, the earlier Empire, especially its moral and religious aspects in contrast with Christian truth and Christian life.

The exercises with the two lower classes are chiefly recitations, accompanied, or rather interspersed with constant communication of collateral illustrative instruction suggested by the text-book, calculated to quicken and broaden the interest of the student; with care, however, not to infringe upon the frequency and thoroughness of the recitations required of the student. Occasional lectures of a more formal character are introduced in the Sophomore year. These treat, in connection with Cicero's Letters, of the representative characters and historical scenes and topics there found; and in connection with Horace, the history of literature down to his time, his contemporaries, the introduction and influence of Greek, especially Alexandrian, literature at Rome, and his own characteristics as to topics, style, views of life, etc.

In reading Terence and Plautus, translation is desired as close to literary English as the comic style and sentiment will allow; and to this end the class is required to read large portions in review and at first sight in advance work. Practice is given in reading the comic metres in order to show their dramatic and linguistic value, especially as bearing upon the colloquial use of Latin. Among other topics investigated are the principles of language-change embodied in the metres, the literary obligations of Terence to Plautus, and of both to early Latin literature and the Greek comedians, the social life of Rome in the second century B. C., and the relations of ancient to modern comedy.

In the Junior year lectures are more frequent; in connection with Juvenal and Pliny, treating of the other sources of our more intimate knowledge of the social and moral condition of the Empire in Italy and the provinces; and, in connection with such of Cicero's rhetorical, ethical, or religious treatises as are read, treating of literary life and training at Rome, the sources and character of Roman philosophy and the religion of Rome. In the Senior year lectures occupy about one-third of the time, being in part illustrative of Lucretius, but chiefly upon the science of language, its general principles, physiology of speech, phonetic laws, formation of words, history of inflections, comparative laws of syntax.

The authors used in the order of the curriculum are Livy; Horace's Odes; Selected Letters of Cicero; Terence; Tacitus; Horace's Satires and Epistles; Catullus; Juvenal's Satires; Selected Letters of Pliny; Suetonius; Plautus; Cicero's Treatises (De Oratore, De Natura Deorum, De Fato, etc., varying from year to year); Lucretius, De Rerum Natura; Bruns, Fontes Juris Romanæ, with use of Corpus Inscriptionum Latinarum, and Ritschl, Priscæ Latinitatis Monumenta; Justiniani Institutiones; Selections from Seneca's Moral Epistles; also from Tertullian and St. Augustine.

The instructors suggest questions for special investigation, and designate volumes and parts of volumes, illustrative of the author or period under study, to be read in private by the class during the term, upon which questions are put in examination papers eliciting extended written answers.

On two evenings of each week, such students as wish meet with Professor Packard for the study of some Latin work collateral with the class-room exercises. The sources of Early Roman law constitute the graduate course for the present year.

English Literature.

PROFESSOR MURRAY.

The study of English Literature is pursued during the Junior year, and through the first term of the Senior. It includes both a required and an elective course.

Junior Year.

The required course extends through the year, occupying two hours a week. In the first term attention is given to the earlier literature, especially Chaucer. In addition to lectures, some of Chaucer's poems are read in the class-room. After Chaucer, Spenser and the English drama before Shakespeare are the subjects of study.

In the second and third terms lectures are given on Elizabethan dramatists and on Bacon, Milton, and Dryden. Milton's Paradise Lost is studied at some length. The chief writers of the Queen Anne Period are also discussed. The required course ends with the study of the Literary Restoration. Cowper, Burns, Wordsworth, Byron, Shelley and Sir Walter Scott are the principal authors brought under review. Should time permit, some representative authors of the Victorian Period will also be noticed.

During the year plays of Shakespeare are studied in the class-room, with reference to a further study of Shakespeare in the Senior year.

Senior Year.

The elective course, to which two hours a week through the first term are assigned, is mainly devoted to critical study of Shakespeare's plays. The choice of these varies from year to year. Those to be read during the first term are Hamlet, Othello, Macbeth and one of the historical plays.

In addition to this study of Shakespeare, lectures on folk-lore may be given in this course.

An optional class is formed during the second term, for reading authors not treated in the class-room. Essays also are required from both the Junior and Senior classes.

English Language and Discourse.

PROFESSOR HUNT AND MR. MILLER.

Freshman Year.

The elements of Discourse are studied as embraced in the following subjects: theme, choice of material, diction, structure, figures, processes, and laws. The study of English words, as given in Trench

(Study of Words) is also pursued. Essay writing is an essential part of the course, and is continued through the year. Lectures on English Vocabulary.

Sophomore Year.

The study of advanced Discourse—its principles, qualities and forms—is pursued. Also, English prose—its periods and forms, and the historical study of the English language. Essays are required throughout the year.

Junior Year.

The study of Anglo-Saxon and Early English as an elective branch is begun. On the basis of March's and Sweet's text-books, the student is drilled in the forms and principles of grammar and taught to read with ease the best prose and poetry of First English. In connection with this grammatical and textual study, instruction is given by lecture on a large variety of subjects—philological and historical—rightfully included in such a course. The students are also encouraged to private reading on any of the topics presented in the class-room. Beówulf and Cædmon are read as an advanced course. In Early English, Piers Plowman is studied.

Oratory and Æsthetic Criticism.

PROFESSOR RAYMOND AND MR. MILLER.

Freshman Year.

First term, weekly lectures and drill in elocution, explaining the meanings and teaching the methods of gesture and vocal emphasis, with readings and declamations required from all the class. Text-book, Raymond's Orator's Manual.

Sophomore Year.

Exercises according to degrees of proficiency. Two private rehearsals of declamations and one written oration required from all, supplemented by a voluntary course in vocal culture.

Junior and Senior Years.

Oratorical delivery and composition, and the analysis and illustration of themes. In Junior year one written oration and two rehearsals in delivery are required from all; in Senior year two written orations, two rehearsals, and public speaking before the College in which there are contests for various prizes in oratory, poetry and disputation. (See heading "Prizes and Competitive Scholarships.") Besides this, between ten and twenty of the best writers and speakers among the highest honormen deliver orations at Commencement. There is an endeavor to adapt the course, as continued through these two years, to the individual needs of students; and opportunities are afforded for voluntary work, together with training, thorough and complete, in vocal culture, and instruction in the principles of æsthetic criticism, as applied to elocution and rhetoric and to poetry and the other arts.

Exercises in English Composition.

These are prepared under the supervision of the professors of English literature, rhetoric and oratory, and are carefully examined and corrected. The requirements are: Freshman year, four or five essays; Sophomore year, three essays and one oration; Junior year, three essays and one oration; Senior year, one essay and two orations. In every year of the course several prizes or honorary appointments are given for excellence in essay writing and in public address, either by the College, or by the Cliosophic or American Whig Societies, acting through committees appointed from their own members in the Faculty. (See heading "Prizes, Scholarships.")

Modern Languages.

PROFESSORS KARGÉ AND WESTCOTT.

Freshman and Sophomore Years.

French begins as a required study in the second term of Freshman year and continues until the end of Sophomore year, twice weekly. Each class is divided for recitations into four sections. The grammar forms, the simpler rules of syntax and translation

from English into French, together with the reading of simple French prose constitute the course of instruction in Freshman year. The text-books used during the last year were Whitney's Practical Grammar and Hachette's Second Reader. Careful attention is paid to pronunciation and the attempt is made during both years to train the ear by constant use of dictation exercises.

The object of the instruction in Sophomore year is to give the student practical command of ordinary French literature in its various styles, and for this purpose to make him master of the principles of normal syntax and familiar with characteristic idioms of the language. The grammatical study of the first year is continued, syntax is more thoroughly treated and some attention given to the fundamental principles of the historical development of the language. The largest share of attention is paid to the reading of prose of this century, but without neglecting the works of the classical age. The books read during the last year were Lamartine's Christophe Colomb, George Sand's La Mare au Diable, and Molière's L'Avare and Le Bourgeois Gentilhomme. The selections will be varied from year to year.

During the fall and winter terms an optional class of Sophomores, meeting in the evening, read with Prof. Westcott a number of plays, representing both the modern and classical drama.

Junior Year.

Such students as have acquired during the preceding two years sufficient knowledge can, if so inclined, pursue an independent course of study in French, while an opportunity is offered them to take up German twice weekly as an elective for the remainder of their college course. As the difficulties in pronouncing German are in no way to be compared with those met with by the student in French, reading, grammar-forms and translation into English are simultaneously taken up, and when a fair knowledge of the verb and its construction is attained, easy and interesting German prose is read, whereby the students are encouraged to form and answer questions in the vernacular. Towards the middle of the second term, Goethe's Hermann und Dorothea is taken up, the German itself being used, as far as time permits, in conducting the recitations.

Senior Year.

Besides the reading of Lessing's Nathan der Weise, Minna von Barnhelm and Schiller's Jungfrau von Orleans, a portion of each hour is devoted to lecture, in which the literary history of leading European nations, from the Italian Renaissance to the Unification of Germany, is expounded.

Provision is now being made for instruction in the Italian and Spanish languages.

Optional courses are offered in both French and German to the members of the Junior and Senior classes.

Sanskrit.

PROFESSOR WINANS.

Sanskrit is a two hour elective course in Senior year. Students are requested to advise with the professor before electing it. In the grammatical study special attention is paid to the bearing of the language on philology and comparative grammar. The various phenomena of the language, its sounds, roots, forms, inflections, are considered with some detail in relation to those of other Aryan tongues. The following is an outline of the early stages of the course; Sanskrit Primer (Perry), a series of graded lessons on the plan of Greek and Latin first-lessons; reading of several books of the Nalopâkhânam, an episode in the great Hindoo epic, the Mahâbhârata, with review of Sanskrit grammar (Whitney's); then, selections from the Hitôpadeça.

DEPARTMENT OF MATHEMATICS AND NATURAL SCIENCE.

Mathematics.

PROFESSORS DUFFIELD AND FINE AND MR. THOMPSON.

In the Freshman year there are two exercises a week during the first and second terms, in algebra, and two exercises a week during the third term, in plane trigonometry, under Professor Fine; in

geometry there are two exercises a week throughout the year, under Mr. Thompson. The text-book in algebra is Wells' University Algebra, to be supplemented by a course on the theory of equations, by the professor. Loomis' Trigonometry is the text-book in trigonometry. Euclid is used as the text-book in geometry because of its historical associations and its decided superiority for the purpose of mental discipline to any modern text-book. The first six and the eleventh books of Euclid are supplemented by a course in solid and spherical geometry. Since a thorough knowledge of geometry and familiarity with its more important propositions can be obtained only by extended practice in the demonstration of theorems and problems not contained in the text-book, this exercise occupies a prominent place in the course of instruction.

The Sophomore class has three exercises a week throughout the year in mathematics, under Professor Duffield. For the first term the studies are analytical trigonometry, mensuration and navigation; for the second and third terms, surveying, spherical trigonometry, analytical geometry and the elements of the differential calculus.

In the Junior year mathematics is an elective study. The class has two exercises a week throughout the year, under Professor Duffield. For the first and second terms the studies are analytical geometry and the differential calculus; for the third term, the integral calculus. Loomis' Trigonometry is the text-book during the first and second terms of the Sophomore year, Bowser's Analytical Geometry and Calculus during the third term Sophomore and the Junior year—supplemented largely by oral instruction, and numerous exercises in addition to the examples for practice of the text-books.

The Senior class in mathematics (elective) has two exercises a week throughout the year, under Professor Fine. The course for the current year is analytical geometry of three dimensions, differential and integral calculus. Williamson's text-books on the calculus are used, supplemented by lectures on determinants, differentiation and integration of functions of the complex variable, definite integrals.

A characteristic feature of the method employed in the College of teaching mathematics is the prominence given to oral instruction.

Throughout the course, lectures on the history as well as on the principles of the different branches of study are given by the instructors.

Astronomy.

PROFESSOR YOUNG AND MR. REED.

General Course—Required.

The course occupies three hours weekly during the first half of the year. There are two examinations, one just before the Thanksgiving recess, and one at the close of the course.

In the first half of the course the principal subjects treated are astronomical instruments, the methods of finding time, latitude and longitude, the earth in its astronomical relations, and the moon. In the second part, the sun, the planetary system and the stars are discussed.

The aim of the course is to impart a knowledge of the most important facts of the science, with an understanding of its principles, but the higher mathematics of the subject are not attempted. The text-book is Young's Text-book of General Astronomy. The class have frequent opportunities for examining the most interesting objects with the telescope.

Practical Astronomy—Elective.

One exercise weekly during Senior year. Text-book, Loomis' Practical Astronomy. The exercises consist of lectures upon the various instruments and their uses, with recitations from the text-book, and the discussion of the observations made by the class.

When the weather permits, each member of the class is required to spend from two to six hours weekly in making and reducing observations. The principal subjects embraced in the course are the following:

I. SEXTANT AND REFLECTING CIRCLE.

(a) Adjustment and theory of errors.

(b) Determination of local time by altitudes of the sun (or stars).

(c) Latitude by altitude of the pole star and a corresponding southern star.

(d) *Latitude by circum-meridian altitudes of the sun.*

(e) *Determination of the eccentricity and graduation errors of the instrument.*

II. TRANSIT INSTRUMENT.

(a) Adjustment and theory of errors.

(b) Determination of local time by star observations, the azimuth correction being determined by a pair of circumpolars.

(c) *Reduction of a complete set of time observations by the method of least squares.*

III. THE ZENITH TELESCOPE.

(a) Determination of latitude from star observations, the instrumental constants being independently determined.

(b) *Determination of latitude, together with the instrumental constants, by observations reduced by the method of least squares.*

IV. PRIME VERTICAL INSTRUMENT.

Determination of latitude and instrumental constants by star observations.

V. ASTRONOMICAL THEODOLITE.

(a) Azimuth by observations of the pole star.

(b) *Latitude and time by Gauss' "three star method."*

VI. MERIDIAN CIRCLE.

(a) Determination of instrumental constants.

(b) Determination of star places.

(c) *Investigation of errors of graduation and periodic errors of micrometer screw.*

VII. EQUATORIAL.

(a) Adjustment of the instrument.

(b) Determination of the place of a comet or minor planet by the ring or square micrometer.

(c) Study of the spectra of sun spots and solar prominences.

(d) *Measurement of double stars with the wire micrometer.*

VIII. MISCELLANEOUS.

(a) Use of ephemerides.

(b) Corrections for refraction.

(c) Reduction of mean star places to apparent.

(d) Treatment of equations of condition.

(e) Value of level divisions determined with the "level-trier."

(f) Determination of personal equation with Eastman's personal equation machine.

(g) *Form and size of transit instrument pivots determined with pivot spherometer.*

NOTE.—The italics denote problems regarded as supplementary. For want of time they are not generally all taken by any one member of the class, but are distributed according to circumstances.

Physics.

PROFESSORS BRACKETT AND MAGIE.

Junior Year.

REQUIRED COURSE.—This course is conducted by means of recitations and lectures. Anthony and Brackett's Text-book of Physics is used. The subjects treated are :

First term—elementary mechanics ; general properties of bodies ; hydrodynamics ; pneumatics ; heat and thermodynamics.

Second term—magnetism ; electrostatics ; electrodynamics.

Third term—acoustics ; optics.

The valuable and well selected apparatus with which the department is supplied is constantly employed to illustrate and enforce the principles discussed.

Four hours a week during the first term and three hours a week during the second and third terms, are allotted to this course.

Senior Year.

ELECTIVE COURSES.—These courses, in general, involve practical work in the Physical Laboratory. They afford opportunity for the extended study of special topics.

The students pursuing the laboratory courses use, as a guide in their work, Stewart and Gee's Elementary Practical Physics, and

are, in addition, referred to the special manuals and memoirs accessible in the Library of the College.

The following are among the problems ordinarily assigned; determinations of the intensity of the force of gravity at Princeton, by the method of Kater and by that of Borda; determination of the modulus of elasticity for different metals; determination of the magnetic declination and of the horizontal component of the earth's magnetism, by means of the magnetometer; determination of the magnetic dip and of the total magnetic force by means of the dip circle; measurement of the electromotive force of various elements by means of the absolute electrometer and by means of the quadrant electrometer; measurement of electric currents by means of the voltameter and by means of the tangent galvanometer; verification of Faraday's laws of electrolysis; determination of the efficiency of the dynamo-machine; measurement of the work expended in maintaining an incandescent lamp in action, (1) by means of the electric relations of the circuit, (2) by means of the calorimeter; determination of index of refraction by several methods; verification of Fresnel's researches in diffraction; measurement of wave lengths of light by simple diffraction methods and by means of the spectrometer; examination of the phenomena and laws connected with polarized light; determination of thermal conductivities; determination of specific heats by various calorimetric methods; investigation of radiant heat by means of Melloni's apparatus.

Those electing these courses are expected to devote at least two hours a week to laboratory work.

A course in theoretical physics is also offered, to consist of the reading and discussion of a treatise on some special department of physics, with experimental demonstrations.

Chemistry.

PROFESSOR SCHANCK.

Students in the Academic Department attend a required course in general chemistry throughout the entire Senior year, and an elective course in applied chemistry during the second and third terms.

The course of instruction in general chemistry occupies two hours in the class-room each week, and in this course the attempt is made to give quite fully the leading principles and facts of general chemistry, enforced by carefully prepared experimental illustrations. Besides these table illustrations, free use is made of lantern projections. The advantage of taking notes and of reading, in connection with the lectures, such works as Roscoe's, Remsen's, Richter's, Wurtz's, Miller's and Roscoe and Schorlemmer's, is appreciated and urged upon the class.

The additional parallel and elective course, embracing the leading applications of chemistry in the arts of life, also illustrated fully, occupies one hour each week second and third terms.

Laboratory Chemistry.

PROFESSOR CORNWALL AND DR. MCCAY.

This course in chemistry constitutes an elective study during the first term of the Senior year. The course includes lectures by Professor Cornwall, with occasional recitations, and also work in the Laboratory under Dr. McCay. Qualitative chemical analysis is first taken up, the students learning to detect single bases and acids, acquiring thereby sufficient training to pursue further the study of qualitative analysis without supervision, should they desire to do so. At the same time they are required to explain fully, by chemical formulas and written explanations, all of the reactions involved in making the tests.

During the latter part of the term, experiments illustrating principles of general chemistry and chemical physics are first performed by the students, after which the most important classes of organic compounds are studied, and finally a few special examinations are made, such as: analysis of potable waters; examinations of milk; study of the general properties of the alkaloids, with a few characteristic tests; properties of disinfectants. The object of the course is to train the student, as far as possible, in chemical manipulation, by means of experiments which shall both illustrate chemical principles and furnish practical knowledge likely to be of use in any subsequent professional or scientific study.

The course requires five or six hours a week; three or four hours being generally devoted to laboratory work, and two hours to lectures and recitations.

Geology and Palæontology.

PROFESSORS SCOTT AND OSBORN.

I. GEOLOGY.—The course in geology, conducted by Professor Scott, occupies three hours a week through the last half of the Senior year. The subjects treated are: (1) dynamical geology; (2) structural geology, including lithology and petrography; and (3) historical geology and palæontology. The text-book used is Le Conte's Elements of Geology (revised edition).

II. PALÆONTOLOGY.—The course in palæontology is one of the elective studies of the Senior class, and occupies about three hours a week throughout the year, including one lecture and two hours of laboratory work a week. The course of lectures, under Professor Scott, is devoted chiefly to the subject of vertebrate palæontology and anatomy. Two hours a week are given to the laboratory work under the direction of Professors Osborn and Scott. This is a parallel course of anatomical study, with dissection of the fishes, reptiles, birds and mammals, which represent living groups and throw most light upon the structure and development of the fossil vertebrates as described in Professor Scott's lectures. The dissections are accompanied by demonstrations and drawings. Practical work is also carried on in the zoological and geological museums, and includes a series of museum demonstrations with explanations and comments upon the specimens in various collections. At the close of the course, a short original thesis on one of the fossil vertebrates in the E. M. Museum is required of each student, and takes the place of the lectures and practical work of third term. The text-books employed are Huxley's Anatomy of the Vertebrates, Parker's Zoötomy and Wiedersheim's Comparative Anatomy (Parker).

For advanced students there are especial facilities for study in the large number of undescribed fossil vertebrates collected in the West by the scientific expeditions sent out by the College in 1877, 1878, 1882, 1885 and 1886.

Physical Geography.

PROFESSOR LIBBEY.

This course occupies two hours each week throughout the second and third terms of Junior year, as an elective study. It consists of the study of the earth in the age of man, comprising two parts:

A. THE GEOGRAPHY OF NATURE, or physical geography proper.

1. The earth in the solar system; astronomical geography, especially with reference to climatology.

2. The earth as a whole, or physics of the globe; its form, dimensions, density and weight; its proper temperature, volcanoes and earthquakes; its magnetism.

3. The surface of the earth.

a. The lands, their arrangements; morphology of the continents; laws of relief.

b. The waters and their movements; inland waters and continental drainage; oceanography; tides and marine currents:—the facts and their causes.

c. The atmosphere; climatology; laws of distribution of temperature; winds and rains; snow, ice and glaciers.

4. Laws of the distribution of plant and animal life.

B. GEOGRAPHY OF MAN, or the relations of physical geography to the history of mankind; human races, characteristics and law of distribution, contrasted with the distribution of life in nature; the historic races and their functions in history. The continents as instruments for the development of human societies. The continents of nature: Africa, South America, Australia. The continents of history: Asia, Europe, North America. Their special functions in the progressive development of mankind.

Lectures and recitations, with oral and written examinations. Text-books:—Physical Geography, Guyot; Earth and Man, Guyot. Both courses are abundantly illustrated by maps and diagrams; and also a series of lectures is given in which the lantern is used to illustrate the phenomena treated of in the regular course by means of a series of views from nature, numbering upwards of four thousand.

Zoology and Botany.

PROFESSORS SCHANCK AND MACLOSKIE.

The required studies in these branches are included in a course which occupies one hour a week of the first and second terms, and two hours a week of the third term of the Sophomore year. Professor Schanck opens the course with a series of lectures, illustrated by models and diagrams, upon human anatomy and physiology. Professor Macloskie resumes the work during the second term in a series of lectures on elementary zoology. In the third term Professor Macloskie conducts a series of recitations in botany, accompanied by practical work in the examination of plants. In the Senior year, students may elect either biology or palæontology. The latter is conducted by Professor Scott, with practical biological work under Professor Osborn. (See course in Geology.)

Biology.

The Senior elective course in Biology is conducted by Professor Macloskie and Professor Osborn, and forms a continuation of the Zoology and Botany of the Sophomore year. It is divided as follows:

I. Botany and Invertebrate Anatomy.

PROFESSOR MACLOSKIE.

This course occupies one required and three optional hours per week during the first term and includes the examination of representative types of phænogamous and cryptogamous plants, and the structure of such invertebrate forms as amœba, planaria, the earthworm, lobster, locust, fresh-water mussel, and the ascidians. The laboratory work includes the dissection of these forms, and the use of the microscope for the elucidation of their histology.

II. Vertebrate Anatomy and Embryology.

PROFESSORS OSBORN AND SCOTT AND MR. PHILLIPS.

This elective is a continuation of Professor Macloskie's course in Biology during the first term of Senior year and occupies two

hours a week during the second and third terms. The course is designed as a preparation for the study of medicine and advanced biology, and consists of: 1st, lectures by Professor Osborn upon general vertebrate anatomy and upon the theory of evolution of living types; 2d, demonstrations of vertebrate embryology in the alternate hours; 3d, practical work, conducted by Mr. Phillips, accompanying these demonstrations. This is exclusively embryological and is given to the study of the development of the chick, following the course of Foster and Balfour's Elements of Embryology with instruction in the technique of embryological methods.

The course will be given this year in the Morphological room of the Class of 1877 Biological Laboratory. A fee of $4.50 is charged for the use of the laboratory appliances, reagents and a case of instruments, subject to a drawback.

During the second term an optional course of lectures on the embryology of the vertebrates will be given by Professor Scott.

Histology.

PROFESSOR LIBBEY.

This study is an elective, occupying one afternoon each week during the second and third terms of Senior year, and consists of lectures and recitations upon normal histology. Only the normal tissues are discussed, and as wide a range of comparative study of the tissues in the animal kingdom is made as the time allotted permits. Especial attention is devoted to injecting, hardening, preserving, staining and mounting specimens, and students are carefully drilled in section cutting and in the use of the microscope, every facility being placed in their hands to enable them to do good work.

The lecture occurs on Wednesday afternoon of each week at 2 o'clock, but the laboratory is open at all hours to its regular students for private investigation, and the Instructor or the Fellow in Biology will be present every afternoon to give assistance to those who may be present. A fee of $10 is charged to cover mounting-material, slides, etc.

Text-books recommended:—Fearnley, Schaefer, Klein, Prudden, Shakespeare-Allen, Stirling, Stricker.

SYNOPSIS OF COURSE.

FRESHMAN YEAR.

First Term.

LATIN—Livy, (Book I). Roman History (Leighton's History of Rome). Latin Prose Composition. GREEK—Homer's Iliad, (Book XVI). Selections from Herodotus, Thucydides, Xenophon. Greek Grammar. Greek Prose Composition. MATHEMATICS—Algebra (Wells'). Geometry (Todhunter's Euclid). ENGLISH—Elementary Discourse (Hunt's Discourse: Part I). English Language; Trench's Study of Words. Lounsbury's English Language, pp. 1-90. Lectures on Discourse and English Language. Essays. ORATORY—Lectures, and Drill in Elocution.

Second and Third Terms.

LATIN—Livy, (Books XXI, XXII). Roman History (Leighton's History of Rome). Cicero: De Senectute, De Amicitia. Horace: Odes. Latin Prose Composition. GREEK—Homer's Iliad (Books XVIII, XXII), Herodotus, Thucydides, Xenophon, selections. Outlines of Greek History. Greek Prose Composition (Sidgwick's). MATHEMATICS—Algebra (Wells'). Geometry (Todhunter's Euclid). Solid and Spherical Geometry. Plane Trigonometry (Loomis'). ENGLISH—Essays and Optional Courses. FRENCH—Whitney's Grammar, with oral and written exercises. Translation of French Prose.

SOPHOMORE YEAR.

First Term.

LATIN—Selected Letters of Cicero. Roman History from the Gracchi to Augustus. Terence: Heautontimorumenos and Andria. Tacitus: Germania. GREEK—Demosthenes: The Olynthiacs and Philippics. Rhetoric of Aristotle, selections. Word-formation. Laws of Phonetic Change. Greek Composition. Euripides: The Medea. Xenophon's Memorabilia. MATHEMATICS—Analytical Trigonometry, Mensuration and Navigation. ENGLISH—Essays and Optional Courses. FRENCH—Grammar completed. Prose of

19th Century. HUMAN ANATOMY AND PHYSIOLOGY. HISTORY—Freeman's General Sketch. ORATORY—Elocution. Declamation. Written Orations.

Second and Third Terms.

LATIN—Horace: Selected Satires and Epistles. Terence: Adelphœ and Andria. Catullus. Tacitus: Agricola or Histories. GREEK—Demosthenes: the Olynthiacs and Philippics. Rhetoric of Aristotle, selections. Word-formation. Laws of Phonetic Change. Greek Composition. Euripides: The Medea. Xenophon's Memorabilia. Dialogues of Lucian (Williams' Selections). MATHEMATICS—Surveying. Spherical Trigonometry. Analytical Geometry. Elements of the Differential Calculus. ENGLISH—Advanced Discourse. Hunt's Discourse: Part II, or equivalent. English Language. Marsh's Origin and History of the English Language and Lectures on English Language, or equivalent. Lectures on English Language and Style. Essays. FRENCH—Syntax. Selections from George Sand, Lamartine, Corneille, Racine, Molière or other authors. ZOOLOGY AND BOTANY. ORATORY—Elocution. Declamations. Written Orations.

JUNIOR YEAR.

First Term.

REQUIRED STUDIES.

PSYCHOLOGY—McCosh's Psychology and Intuitions of the Mind. ENGLISH LITERATURE—Chaucer. Lectures. Essays. PHYSICS.

ELECTIVE STUDIES.

In Philosophy—PHILOSOPHY OF HISTORY.

In Literature—LATIN—Juvenal's Satires, Suetonius, Select Letters of Pliny, and History of the Empire. GREEK—Aristophanes: Birds. Lectures on Greek Comedy. GERMAN—Grammar. Oral and written translations from English into German. Whitney's German Reader. ANGLO-SAXON—March's or Sweet's Anglo-Saxon Reader. Cædmon's Exodus and Daniel (Hunt). Beówulf (Harrison). Lectures on First English.

In Science—MATHEMATICS—Analytical Geometry.

Second and Third Terms.

REQUIRED STUDIES.

PSYCHOLOGY—(Concluded). LOGIC—McCosh's Manual. ENGLISH LITERATURE—Lectures. Essays. PHYSICS. ORATORY—Criticism. Written Orations. Delivery.

ELECTIVE STUDIES.

In Philosophy—PHILOSOPHY OF HISTORY.

In Literature—LATIN—Cicero de Legibus. Plautus: Trinummus and Mostellaria. GREEK—Phædo of Plato. Lectures. FRENCH—Syntax. Racine's Athalie. Corneille's Cid. GERMAN—Grammar and Prose Composition. Goethe: Hermann und Dorothea.

In Science—MATHEMATICS.—Differential and Integral Calculus. PHYSICAL GEOGRAPHY.

SENIOR YEAR.

First Term.

REQUIRED STUDIES.

ETHICS—Calderwood's Moral Science. Lectures. JURISPRUDENCE AND POLITICAL ECONOMY—Lectures. ENGLISH—Essays. ASTRONOMY—Young's. Lectures. CHEMISTRY—Lectures. ORATORY—Criticism. Written Orations. Public Address.

ELECTIVE STUDIES.

In Philosophy—METAPHYSICS. PHYSIOLOGICAL PSYCHOLOGY. COMPARATIVE POLITICS. ARCHÆOLOGY.

In Literature—ENGLISH LITERATURE—Shakespeare. GREEK—Sophocles: Œdipus Tyrannus. Aristotle's Ars Poetica. Plato: Selected Dialogues. Greek Literature and Philology. GERMAN—Lessing: Nathan der Weise, Minna von Barnhelm. Schiller: Jungfrau von Orleans. Lectures. SANSKRIT—Perry's Primer.

In Science—MATHEMATICS. ASTRONOMY—Practical. PHYSICS—Practical course in the Laboratory, or Theoretical Physics. LABORATORY CHEMISTRY. BIOLOGY or PALÆONTOLOGY.

Second and Third Terms.

REQUIRED STUDIES.

ETHICS (concluded). SCIENCE AND RELIGION—Lectures and recitations. JURISPRUDENCE AND POLITICAL ECONOMY—Lectures. ENGLISH—Essays. ASTRONOMY—Young's. Lectures. CHEMISTRY—Lectures. GEOLOGY—Le Conte's. Lectures.

ELECTIVE STUDIES.

In Philosophy—HISTORY OF PHILOSOPHY. SCIENCE AND RELIGION—Lectures. INTERNATIONAL AND CONSTITUTIONAL LAW. Gallaudet's Manual. Lectures. HISTORY OF ART—Ancient. PEDAGOGICS.

In Literature—LATIN AND THE SCIENCE OF LANGUAGE—Lucretius. Lectures on General Principles of Philology and on Comparative Inflection and Syntax. Institutes of Justinian. GREEK—Sophocles: Œdipus Tyrannus. Greek Literature. GERMAN—Review of Grammar. Lessing: Minna von Barnhelm. Goethe: Hermann und Dorothea; Faust, first part. Schiller: Jungfrau von Orleans. Lectures on the History and Literature of the Language. SANSKRIT—Perry's Primer.

In Science—MATHEMATICS. ASTRONOMY—Practical. PHYSICS—Practical course in the Laboratory, or Theoretical Physics. APPLIED CHEMISTRY. BIOLOGY OR PALÆONTOLOGY. HISTOLOGY.

EXHIBIT OF STUDIES FOR THE FOUR ACADEMIC YEARS.

NOTE—The numbers indicate hours per week.

FRESHMAN YEAR STUDIES.

ALL REQUIRED.

First Term.		*Second Term.*		*Third Term.*	
Latin,	4	Latin,	5	Latin,	5
Greek,	5	Greek,	4	Greek,	4
Math.,	4	Math.,	4	Math.,	4
English,	2	French,	2	French,	2
Total hours,	15		15		15

SOPHOMORE YEAR STUDIES.

ALL REQUIRED.

First Term.		*Second Term.*		*Third Term.*	
Latin,	3	Latin,	3	Latin,	3
Greek,	4	Greek,	4	Greek,	3
Math.,	3	Math.,	3	Math.,	3
History,	2	English,	2	English,	2
French,	2	French,	2	French,	2
Anatomy,	1	Zoology,	1	Botany,	2
Total hours,	15		15		15

JUNIOR YEAR STUDIES.

I. REQUIRED.

First Term.		*Second Term.*		*Third Term.*	
Physics,	4	Physics,	3	Physics,	3
English,	2	English,	2	English,	2
Psychology,	2	Psych. & Logic,	3	Logic,	3
Hours req'd,	8		8		8

II. ELECTIVE.

(The student selects three subjects).

Latin,	2	Latin,	2	Latin,	2
Greek,	2	Greek,	2	Greek,	2
Math.,	2	Math.,	2	Math.,	2
French,	2	German,	2	German,	2
History,	2	History,	2	History,	2
Anglo-Saxon,	2				
		Phys. Geog.,	2	Phys. Geog.,	2
Hours elect.,	6		6		6
Total Hours,	14		14		14

SENIOR YEAR STUDIES.

I. REQUIRED.

First Term.		*Second Term.*		*Third Term.*	
Astronomy,	3	Ast. & Geology,	3	Geology,	3
Chemistry,	2	Chemistry,	2	Chemistry,	2
Ethics,	2	Ethics,	1[1]		
		Sc. and Rel.,	1	Sci. and Rel.,	1
Jur. & Pol. Ec.,	2	Jur. & Pol. Ec.	2		
Hours req'd,	9		9		6

II. ELECTIVE.

(The student selects 6 or 7 hours).

		I. Philosophy.			
Metaphysics,	2	Hist. Philos.,	2	Hist. Philos.,	2
Comp. Pol.,	2	Sc. and Rel.,	2	Sc. and Rel.,	2
Phys. Psyc.,	2	Internat. Law,	2	Internat. Law,	2
Archæology,	2	Hist. Art,	2	Hist. Art,	2
Pedagogics,	2				
		II. Literature.			
Greek (O.),	2	Greek (C.),	2	Greek (C.),	2
English,	2	Latin,	2	Latin,	2
French,	2	German,	2	German,	2
Sanskrit,	2	Sanskrit,	2	Sanskrit,	2
		III. Science.			
Math.,	2	Math.,	2	Math.,	2
Pract. Astr.	1 (2)	Pract. Astr.,	1 (2)	Pract. Astr.,	1 (2)
Physics,	1 (2)	Physics,	1 (2)	Physics,	1 (2)
Lab. Chem.,	2 (3)	App. Chem.,	1	App. Chem.,	1
Biol. *or* Pal.,	1 (2)	Biol. *or* Pal.,	1 (2)	Biol. *or* Pal.,	1 (2)
		Histology,	1 (2)	Histology,	1 (2)
Hours elect,	6 or 7		6 or 7		6 or 7
Total hours,	15 or 16		15 or 16		12 or 13

1. BIBLE, ORATORY and ESSAYS are required throughout the four years.

2. Senior Electives marked 1 (2) occupy one hour per week on the Weekly Schedule, but count as two-hour Electives, on account of extra laboratory and observatory work. *Lab. Chem.* counts as a three-hour Elective.

FRESHMAN WEEKLY SCHEDULE—FIRST TERM.

		Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
I.	8½		Math. I.	English	Latin II.	Latin II.	Bible
	10	Math. I.	Math. II.		Greek II.		Math. II. 10½
	11			English		Greek II.	
	3		Greek II.				
	4	Greek I.	Elocution	Latin II. 5	Latin I.	Greek I.	
II.	8½		Math. II.	English	Math. II.	Greek II.	Bible
	10	Greek I.					Latin II. 10½
	11		Math. I.	English	Greek II.	Greek I.	
	3	Math. I.					
	4	Elocution	Greek II.	Latin II.	Latin I.	Latin II.	
III.	8½		Greek I.	Math. II.	English	English	Bible 9
	10					Latin II.	Greek II. 10½
	11	Math. I.	Latin II.	Greek II.	Greek I.		
	3					Greek II.	
	4	Math. II.	Math. I.	Latin I.	Latin II.	Elocution	
IV.	8½		Latin II.	Greek II.	Greek I.	Math II.	Bible 9
	10						English 10½
	11	Greek I.	Math. II.	Latin II.	English	Latin II.	
	3		Math. I.		Greek II.		
	4	Math I.		Latin I.	Elocution	Greek II.	

Greek I=Homer. Latin I=Latin Prose. Math. I=Algebra.
Greek II=Xenophon. Latin II=Livy. Math. II=Geometry.

FRESHMAN WEEKLY SCHEDULE—SECOND AND THIRD TERMS.

		Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
I.	8½		Algebra	Herodotus	Geometry	French	Bible
	10			Horace			
	11	Livy	Geometry		Livy	Herodotus	Algebra 10½
	3				Homer	Horace	
	4	Homer	Livy	French			
II.	8½		French	Livy	Homer	Herodotus	Bible
	10	Homer	Algebra				
	11			Horace	Herodotus	Livy	Geometry 10½
	3		Livy				
	4	Algebra		Geometry	French	Horace	
III.	8½		Homer	Geometry	Livy	Geometry	Bible
	10					Horace	
	11	Algebra	Livy	French	Homer		Herodotus 10½
	3			Horace			
	4	Livy	Algebra		Herodotus	French	
IV.	8½		Livy	Algebra	French	Livy	Bible
	10						
	11	Homer	Algebra	Herodotus	Geometry	Horace	Livy 10½
	3						
	4	Geometry	French	Horace	Homer	Herodotus	

SOPHOMORE WEEKLY SCHEDULE—FIRST TERM.

		Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
	8½		Latin (P.)	History	Anat. & Phys.	Greek (O.)	Bible
	10	Math.	French		French	History	Greek (O.)
I.	11		French	Latin (P.)	French		Greek (O.)
	3	Math.	Math.		Greek (O.)	Greek (O.)	
	4			Latin (P.)	Greek (O.)	Greek (O.)	
	8½		Latin (W.)	History	Greek (W.)	Greek (C.)	Bible
	10						
II.	11	Math.	Latin (W.)	Latin (W.)	Anat. & Phys.	History	French
	3			Greek (W.)	Greek (C.)	French	French
	4	Math.	Math.	Greek (W.)	Greek (C.)	French	

SECOND AND THIRD TERMS.

		Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
	8½		English	French	Greek (W.)	Greek (C.)*	Bible
	10		French	French			
I.	11	Math.	French	Zool. & Bot.	Latin (W.)	English	Latin (W.)
	3					Greek (C.)	
	4	Math.	Math.	Greek (W.)	Latin (W.)	Greek (C.)	
	8½		Latin (P.)	Zool. & Bot.	Greek (O.)	English	Bible
	10	Math.			French	Greek (O.)	French
II.	11		English	Latin (P.)	French	Greek (O.) *	French
	3	Math.	Math.		Greek (O.)	Greek (O.)	
	4			Latin (P.)	Greek (O.)	Greek (O.)	

* Botany, third term.

JUNIOR WEEKLY SCHEDULE—FIRST TERM.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY
8½	PHYSICS	PHYSICS	PSYCHOLOGY	*Latin*	*Latin*	BIBLE
10				*Anglo-Saxon*	*Anglo-Saxon*	
11	*Greek*	*Mathematics*	PSYCHOLOGY	*Mod. Lang.*	*Mod. Lang.*	ENGLISH
3		*Greek*			*Mathematics*	
4	PHYSICS	PHYSICS	*Hist.* (5 p. m.)	*History*	ENGLISH	

SECOND AND THIRD TERMS.

8½	PHYSICS	PSYCHOLOGY [1] LOGIC [2]	PSYCHOLOGY [1] LOGIC [2]	*Latin*	*Latin*	BIBLE
10				*Mod. Lang.*	*Phys. Geog.*	
11	*Greek*	*Mathematics*	PSYCHOLOGY [1] LOGIC [2]	*Phys. Geog.*	*Mod. Lang.*	ENGLISH
3	*Greek*	*Greek*			*Mathematics*	
4	PHYSICS	PHYSICS	*History*	*History*	ENGLISH	

[1] Until Feb. 1st. [2] From Feb. 1st.

SENIOR WEEKLY SCHEDULE—FIRST TERM.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½	JUR. and POL.	ASTRONOMY	*Physics* *Biology*	*Theo. Physics* *Comp. Politics*	*German* *Archæology*	BIBLE
10	*Pract. Astron.*		*Metaphysics*	{ *Archæology* { *Pedagogics*	*Greek* (O.)	*Palæontology*
11	*Metaphysics*	ETHICS	ASTRONOMY	*English*	*English*	CHEMISTRY
3	*Greek* (O.)			*German*	*Comp. Politics*	
4	JUR. and POL.	ASTRONOMY	*Phys. Psychol.*	*Lab. Chemistry*	CHEMISTRY	
5		*Lab. Chemistry*	ETHICS	*Phys. Psychol.*		

SECOND AND THIRD TERMS.

8½	JUR. and POL.[1]	ASTRONOMY [2] GEOLOGY [3]	ASTRONOMY [2] GEOLOGY [3]	*Int. and Const. Law*	*German*	BIBLE
10	*Pract. Astron.*			*Hist. Phil.*	*Greek* (C.)	*Palæontology*
11	*Hist. Phil.*	ETHICS [1]	SCI. and REL.	*Latin*	*Latin*	CHEMISTRY
3	*Greek* (C.)		*Physics* *Biology*	*German* *Histology*	*Int. and Const. Law*	
4	JUR. and POL.[1]	ASTRONOMY [2] GEOLOGY [3]	{ *Sci. and Rel.* { *Hist. of Art.*	*Applied Chem.* *Pedagogics.*	CHEMISTRY	

[1] Through Second Term.
[2] Until Feb. 1st. [3] After Feb. 1st.

{ *Sci. and Rel.*
{ *Hist. of Art.*

The hours for *Mathematics* and *Sanskrit* and one hour in *Pedagogics* are to be arranged by the Professors in charge.

Bracketed electives are mutually exclusive.

EXAMINATIONS, STANDING AND GRADUATION.

EXAMINATIONS.

Regular Examinations.—At the end of each term each class is ordinarily examined in the studies of that term. At the close of the third term the examination in certain subjects embraces not only the work of that term, but the course of the entire year.

Partial Examinations and Written Recitations.—In addition to the regular examinations, partial examinations or written recitations are held from time to time during the term.

Divisional Examinations.—In the Freshman class, a special examination is held early in the first term, the results of which determine the distribution of the class into graded divisions. These are reorganized at the beginning of the second and third terms, according to the results of the last preceding regular examination.

General Regulations.—Examinations are for the most part conducted in writing, but in certain subjects are oral in whole or in part. Private examinations are not allowed except in extreme cases, and by special permission of the Faculty. Absence from an examination, except for reasons of absolute necessity, will be regarded as a serious delinquency, and a subsequent examination will not be granted except by a vote of the Faculty.

Regulations concerning the Removal of Conditions.

Students who shall appear to the Faculty, on examination, to be deficient in their studies, will be dealt with according to the nature and extent of the deficiency. Any member of any one of the three lower classes who shall fail to pass the examinations at the end of any term in more than two departments, involving as much as six hours of schedule time, shall be dropped from his class and shall be required to enter a lower class or to withdraw from College. If the failure be in not more than two departments, the student

FRESHMAN WEEKLY SCHEDULE—FIRST TERM.

		Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
I.	8½		Math. I.	English	Latin II.	Latin II.	Bible
	10	Math. I.	Math. II.		Greek II.		Math. II. 10½
	11			English		Greek II.	
	3		Greek II.				
	4	Greek I.	Elocution	Latin II. 5	Latin I.	Greek I.	
II.	8½		Math. II.	English	Math. II.	Greek II.	Bible
	10	Greek I.					Latin II. 10½
	11		Math. I.	English	Greek II.	Greek I.	
	3	Math. I.					
	4	Elocution	Greek II.	Latin II.	Latin I.	Latin II.	
III.	8½		Greek I.	Math. II.	English	English	Bible 9
	10					Latin II.	Greek II. 10½
	11	Math. I.	Latin II.	Greek II.	Greek I.		
	3					Greek II.	
	4	Math. II.	Math. I.	Latin I.	Latin II.	Elocution	
IV.	8½		Latin II.	Greek II.	Greek I.	Math. II.	Bible 9
	10						English 10½
	11	Greek I.	Math. II.	Latin II.	English	Latin II.	
	3		Math. I.		Greek II.		
	4	Math I.		Latin I.	Elocution	Greek II.	

Greek I=Homer. Latin I=Latin Prose. Math. I=Algebra.
Greek II=Xenophon. Latin II=Livy. Math. II=Geometry.

FRESHMAN WEEKLY SCHEDULE—SECOND AND THIRD TERMS.

		MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
I.	8½		Algebra	Herodotus	Geometry	French	Bible
	10			Horace			
	11	Livy	Geometry		Livy	Herodotus	Algebra 10½
	3				Homer	Horace	
	4	Homer	Livy	French			
II.	8½		French	Livy	Homer	Herodotus	Bible
	10	Homer	Algebra				
	11			Horace	Herodotus	Livy	Geometry 10½
	3		Livy				
	4	Algebra		Geometry	French	Horace	
III.	8½		Homer	Geometry	Livy	Geometry	Bible
	10					Horace	
	11	Algebra	Livy	French	Homer		Herodotus 10½
	3			Horace			
	4	Livy	Algebra		Herodotus	French	
IV.	8½		Livy	Algebra	French	Livy	Bible
	10						
	11	Homer	Algebra	Herodotus	Geometry	Horace	Livy 10½
	3						
	4	Geometry	French	Horace	Homer	Herodotus	

SOPHOMORE WEEKLY SCHEDULE—FIRST TERM.

		Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
I.	8½		Latin (P.)	History	Anat. & Phys.	Greek (O.)	Bible
	10	Math.	French		French	History	Greek (O.)
	11		French	Latin (P.)	French		Greek (O.)
	3	Math.	Math.		Greek (O.)	Greek (O.)	
	4			Latin (P.)	Greek (O.)	Greek (O.)	
II.	8½		Latin (W.)	History	Greek (W.)	Greek (C.)	Bible
	10						
	11	Math.	Latin (W.)	Latin (W.)	Anat. & Phys.	History	French
	3			Greek (W.)	Greek (C.)	French	French
	4	Math.	Math.	Greek (W.)	Greek (C.)	French	

SECOND AND THIRD TERMS.

		Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
I.	8½		English	French	Greek (W.)	Greek (C.)*	Bible
	10		French	French			
	11	Math.	French	Zool. & Bot.	Latin (W.)	English	Latin (W.)
	3					Greek (C.)	
	4	Math.	Math.	Greek (W.)	Latin (W.)	Greek (C.)	
II.	8½		Latin (P.)	Zool. & Bot.	Greek (O.)	English	Bible
	10	Math.			French	Greek (O.)	French
	11		English	Latin (P.)	French	Greek (O.) *	French
	3	Math.	Math.		Greek (O.)	Greek (O.)	
	4			Latin (P.)	Greek (O.)	Greek (O.)	

* Botany, third term.

JUNIOR WEEKLY SCHEDULE—FIRST TERM.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY
8½	PHYSICS	PHYSICS	PSYCHOLOGY	*Latin*	*Latin*	BIBLE
10				*Anglo-Saxon*	*Anglo-Saxon*	
11	*Greek*	*Mathematics*	PSYCHOLOGY	*Mod. Lang.*	*Mod. Lang.*	ENGLISH
3		*Greek*			*Mathematics*	
4	PHYSICS	PHYSICS	*Hist.* (5 p. m.)	*History*	ENGLISH	

SECOND AND THIRD TERMS.

8½	PHYSICS	PSYCHOLOGY [1] LOGIC [2]	PSYCHOLOGY [1] LOGIC [2]	*Latin*	*Latin*	BIBLE
10				*Mod. Lang.*	*Phys. Geog.*	
11	*Greek*	*Mathematics*	PSYCHOLOGY [1] LOGIC [2]	*Phys. Geog.*	*Mod. Lang.*	ENGLISH
3	*Greek*	*Greek*			*Mathematics*	
4	PHYSICS	PHYSICS	*History*	*History*	ENGLISH	

[1] Until Feb. 1st. [2] From Feb. 1st.

SENIOR WEEKLY SCHEDULE—FIRST TERM.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½	JUR. and POL.	ASTRONOMY	*Physics* *Biology*	*Theo. Physics* *Comp. Politics*	*German* *Archæology*	BIBLE
10	*Pract. Astron.*		*Metaphysics*	{ *Archæology* { *Pedagogics*	*Greek* (O.)	*Palæontology*
11	*Metaphysics*	ETHICS	ASTRONOMY	*English*	*English*	CHEMISTRY
3	*Greek* (O.)			*German*	*Comp. Politics*	
4	JUR. and POL.	ASTRONOMY	*Phys. Psychol.*	*Lab. Chemistry*	CHEMISTRY	
5		*Lab. Chemistry*	ETHICS	*Phys. Psychol.*		

SECOND AND THIRD TERMS.

8½	JUR. and POL.[1]	ASTRONOMY [2] GEOLOGY [3]	ASTRONOMY [2] GEOLOGY [3]	*Int. and Const. Law*	*German*	BIBLE
10	*Pract. Astron.*			*Hist. Phil.*	*Greek* (C.)	*Palæontology*
11	*Hist. Phil.*	ETHICS [1]	SCI. and REL.	*Latin*	*Latin*	CHEMISTRY
3	*Greek* (C.)		*Physics* *Biology*	*German* *Histology*	*Int. and Const. Law*	
4	JUR. and POL.[1]	ASTRONOMY [2] GEOLOGY [3]	{ *Sci. and Rel.* { *Hist. of Art.*	*Applied Chem.* *Pedagogics.*	CHEMISTRY	
				{ *Sci. and Rel.* { *Hist. of Art.*		

[1] Through Second Term.
[2] Until Feb. 1st. [3] After Feb. 1st.

The hours for *Mathematics* and *Sanskrit* and one hour in *Pedagogics* are to be arranged by the Professors in charge.

Bracketed electives are mutually exclusive.

EXAMINATIONS, STANDING AND GRADUATION.

EXAMINATIONS.

Regular Examinations.—At the end of each term each class is ordinarily examined in the studies of that term. At the close of the third term the examination in certain subjects embraces not only the work of that term, but the course of the entire year.

Partial Examinations and Written Recitations.—In addition to the regular examinations, partial examinations or written recitations are held from time to time during the term.

Divisional Examinations.—In the Freshman class, a special examination is held early in the first term, the results of which determine the distribution of the class into graded divisions. These are reorganized at the beginning of the second and third terms, according to the results of the last preceding regular examination.

General Regulations.—Examinations are for the most part conducted in writing, but in certain subjects are oral in whole or in part. Private examinations are not allowed except in extreme cases, and by special permission of the Faculty. Absence from an examination, except for reasons of absolute necessity, will be regarded as a serious delinquency, and a subsequent examination will not be granted except by a vote of the Faculty.

Regulations concerning the Removal of Conditions.

Students who shall appear to the Faculty, on examination, to be deficient in their studies, will be dealt with according to the nature and extent of the deficiency. Any member of any one of the three lower classes who shall fail to pass the examinations at the end of any term in more than two departments, involving as much as six hours of schedule time, shall be dropped from his class and shall be required to enter a lower class or to withdraw from College. If the failure be in not more than two departments, the student

may be allowed a second trial at the beginning of the next term; if he fail in this second examination, he shall employ a tutor approved by the Faculty, and be allowed four weeks for further preparation; but if he still fail to pass, he shall be required to enter a lower class or withdraw from College.

In the Freshman class, failure with either instructor in Greek, in Latin, or in Mathematics, is reckoned as a separate failure in the application of the above rules.

The Senior class will be subject to the same regulations as the three lower classes so far as regards the examinations at the close of the first term, and the removal of any conditions then incurred.

In the application of these regulations, special cases, arising from illness or other causes, will be duly considered.

On the second day of each term, Thursday, at 10 o'clock, A. M., all delinquent or unexamined students are required to meet in the Old Chapel to make arrangements with their instructors for examination in the subject in which they are deficient. This does not apply to entering students. In the first term, this examination is to take place immediately at the beginning of the term; in the second and third terms, two weeks are allowed for it. Any student not present as thus directed, or not prepared for examination at the time appointed, will be debarred from another opportunity, except by special vote of the Faculty.

STANDING.

The results of the term examinations are combined with those of the recitations to decide the relative standing or rank of the student. The maximum mark in each study is one hundred; the minimum or passing mark is fifty. Students falling below the passing mark in any study are conditioned, and in order to continue with the class must be re-examined.

Each instructor, after computing from recitations and examinations the marks of his classes, determines each student's rank by assigning him to one of six groups into which the class is divided. These groups are constituted and numbered in order of merit—those students whose marks indicate the highest attainments being assigned to the first group, the next highest to the second group, and so on

through the six groups. The first group is to contain not less than one-thirtieth, nor more than one-tenth of the class; the second, fourth and fifth groups each not more than one-fifth; the third not more than one-fourth; and the sixth group comprises the remainder of the class, except those not fully examined.

The general rank of a student is determined by combining his group-numbers in the several studies in proportion to the allotted schedule time of each. Those students whose averages are highest, and above an established limit, are assigned to the first general group, those next highest to the second general group; and so on, through the six general groups.

The first and second general groups for the year, of the Junior, Sophomore and Freshman classes, constitute the Honor groups of these classes, and are published in the Catalogue of the following year—the names included in each group being printed in alphabetical order.

In determining a student's standing, essays count as one hour per week throughout each of the four years. Account is taken of attendance and conduct as well as scholarship, according to the published rules of the Faculty.

A report of the standing of each student is made to his parent or guardian by the Registrar of the College at the close of the first term and at the close of the year. The latter report gives also the standing for the whole year.

GRADUATION.

Bachelor's Degree.

Students who pass their final examination are ordinarily recommended by the Faculty for the degree of Bachelor of Arts, and if the recommendation is approved by the Trustees, the degree is conferred at Commencement, and they receive diplomas signed by the President and the Clerk of the Board of Trustees.

No student will be recommended to the Trustees for a degree who fails to pass the examinations at the close of the last term of the Senior year.

Any member of the Senior class failing to pass the regular final examination in but *one* of his studies may, by vote of the Faculty,

be allowed a re-examination, and if successful in passing this, may be recommended to receive his degree with his class.

Any member of the Senior class failing to pass the regular final examination in *two* of his studies may, by vote of the Faculty, be allowed a re-examination, and if successful in this may be recommended for a degree *at some time in the next Academic year.*

Final Rank and Graduation Honors.

The final rank of members of the graduating class is computed by combining the averages for the several years of the course, except that the average for the Freshman year is omitted in those cases in which it would lower the standing of the student. The Faculty then determines what portion of the class shall be printed as the Honor List—the names of the members of each group of the Honor List being printed in alphabetical order.

The first and second general groups thus determined are the Honor groups of the graduating class, and are designated *magna cum laude* and *cum laude* respectively.

The higher distinction of *insigni cum laude* and the highest of *summa cum laude* are reserved for very unusual excellence.

Commencement Appointments.

Commencement orations and theses, indicative of general or special excellence, are awarded by the Faculty to such students as are deemed worthy of distinction. The student whose individual rank is highest is ordinarily awarded the Latin Salutatory by vote of the Faculty. In like manner the student whose individual rank is the next highest receives the English Salutatory. The Valedictory is awarded with special regard to the qualifications of the student as a valedictorian, as well as on the ground of scholarship. Orations and theses designated as Philosophical, Classical, Mathematical, Physical, Metaphysical, Ethical, Historical, Literary, Belles Lettres, Modern Language, are awarded to students eminent in the corresponding departments.

In the award of all degrees and honors, regard is had to the conduct of the student during his course, and any student who has incurred serious discipline may be debarred from the rank to which otherwise his scholarship would have entitled him.

THE

JOHN C. GREEN SCHOOL OF SCIENCE.

PROFESSORS.

FRANCIS L. PATTON, PRESIDENT.
JAMES O. MURRAY, DEAN, *English Literature and Language.*
J. STILLWELL SCHANCK, *General Chemistry.*
CYRUS F. BRACKETT, *Physics.*
HENRY B. CORNWALL, *Analytical Chemistry and Mineralogy.*
GEORGE MACLOSKIE, *Botany, Zoology, Biblical Instruction.*
CHARLES McMILLAN, *Civil Engineering.*
CHARLES A. YOUNG, *Astronomy.*
CHARLES G. ROCKWOOD, JR., *Mathematics.*
THEODORE W. HUNT, *Rhetoric, English Language.*
GEORGE L. RAYMOND, *Oratory and Æsthetic Criticism.*
WILLIAM LIBBEY, JR., *Histology.*
WILLIAM B. SCOTT, *Geology.*
HENRY F. OSBORN, *Comparative Anatomy.*
FREDERICK N. WILLSON, *Descriptive Geometry, Stereotomy, Technical Drawing.*
ALEXANDER T. ORMOND, *Psychology.*
ALEXANDER JOHNSTON, *Political Economy.*
HERMANN C. O. HUSS, *French, German.*
WILLIAM F. MAGIE, *Physics.*
H. S. S. SMITH, *Civil Engineering.*
LEROY W. McCAY, *Analytical Chemistry.*
MARION M. MILLER, *English.*
JOHN W. PHILLIPS, *Biology.*
TAYLOR REED, *Practical Astronomy.*

FOUNDATION AND ORGANIZATION OF THE JOHN C. GREEN SCHOOL OF SCIENCE.

This institution is a department of the College of New Jersey, founded in 1873 upon an endowment by Mr. John C. Green.

Its design is to furnish more extended and special instruction in the natural sciences, providing several scientific courses leading to the degree of Bachelor of Science and also various graduate courses. The course in Civil Engineering was added in 1875, by further endowment from the residuary legatees of Mr. Green.

The undergraduate courses offer, according to the choice of the student, efficient education in the natural sciences in general, or a thorough training in the study of civil engineering and in various other branches of science, pure and applied. At the same time a liberal education in certain academic studies is secured to all candidates for a degree.

Graduate courses of study for the degrees of Master of Science and Doctor of Science are provided; and also special courses which, under certain conditions, may be taken by students who are not candidates for any degree.

Instruction is given by lectures and recitations—by practice in the laboratories, drawing-rooms, museums and field—and excursions are made to different points of interest.

Before receiving his degree every student must present to the Faculty an acceptable thesis on some scientific subject, the nature of which will depend upon the course he has pursued.

ADMISSION.

ENTRANCE EXAMINATIONS.

All entering students on their arrival must report at the President's house, and register. The first examination for admission will begin in Princeton on Thursday, June 20th, 1889, at 11 A. M., and will continue through the afternoon of Friday. The second will begin on Tuesday, September 10th, at 11 A. M., and continue through the afternoon of Wednesday. Applicants who have conditions or other deficiencies from the June examination are expected to remove them at this time. *Attendance is required at the beginning of the examinations.*

Simultaneously with the June entrance examinations in Princeton, examinations are held in the following cities, viz.: Pittsburgh, Cincinnati, Louisville, Chicago, St. Louis, Omaha, Denver and San Francisco, and at preparatory schools and other cities when necessary. The precise places in which the examinations are to be held can be learned by application to the President. Due notice of these examinations will also be published in leading local newspapers for several weeks in advance.

Examinations at other times and places than those specified are very inconvenient and often impracticable, and applicants for examination at other than the regular days are required to pay $10 into the treasury.

At the examinations in June, candidates intending to enter the Freshman class one year later are admitted, on request, to examination on a portion of the subjects required for entrance. Applications for such preliminary examination should be made to the President, with a statement of the subjects and amount offered, at least two weeks previous to the examination.

Candidates for admission to the Freshman class must be at least sixteen years of age. They will be examined in the following books and subjects:

ENGLISH: Grammar—Whitney, or Reed and Kellogg (Higher Lessons); Modern Geography — Guyot's Grammar-School Geography; U. S. History—Anderson's or Johnston's; Essay—the theme for 1889 will be based on the life of Bryant or of Hugh Miller. The attention of preparatory schools is called to the need of a more thorough study of elementary English. MATHEMATICS: Arithmetic entire, including the Metric system, a practical knowledge of which is indispensable; Algebra, through quadratic equations involving two unknown quantities, including evolution, radicals, theory of exponents; Geometry—plane geometry entire (five books of Chauvenet's Geometry or their equivalent). FRENCH: The elements of Grammar (Otto, pp. 28–201, or Whitney, pp. 27–202), with the turning of easy sentences into French, and the translation of fifty pages of simple French prose, as that of Lamartine's Graziella. PHYSICAL GEOGRAPHY: The elements, as contained in Guyot's Grammar-School Geography.

Candidates for the degree of Bachelor of Science will be examined (in addition to the subjects above enumerated) in LATIN: Grammar, with special attention to parsing, and the retranslation from English into Latin of simple sentences from the First Book of Cæsar; Translation, Cæsar (five books of the Gallic War), Cicero (the four orations against Catiline), or equivalents from other Latin authors.

It is recommended that all candidates should receive instruction in free-hand drawing before their entrance.

OTHER REQUIREMENTS.

Candidates for admission to an advanced class will be examined in the studies previously pursued by the class they propose to enter.

All candidates for admission must bring satisfactory testimonials of good moral character and attainments, preferably from their last instructors, and if the candidate has been a member of another college, university, or similar institution, he must produce a certificate from its President or Faculty that he is free from censure in the same.

No candidate is admitted without an examination and a vote of the Faculty.

Immediately after the opening of the College the entering students meet according to announcement for the registration of their names and subscription to the following pledge, required by the Board of Trustees:

We, the undersigned, do individually for ourselves promise, without any mental reservation, that we will have no connection whatever with any secret society, nor be present at the meetings of any secret society in this or any other college so long as we are members of the College of New Jersey; it being understood that this promise has no reference to the American Whig and Cliosophic Societies. We also declare that we regard ourselves bound to keep this promise and on no account whatever to violate it.

UNDERGRADUATE COURSES.

Undergraduate courses are provided for the degrees of Bachelor of Science, and of Civil Engineer.

All candidates for the degree of Bachelor of Science pursue the same studies until the end of the first term of the Junior year, after which they pursue one of the following five Elective Courses: General Science; Chemistry and Mineralogy; Biology and Chemistry; Biology and Geology; Mathematics and Mechanics.

The student must announce his election before the end of the first term of the Junior year. He cannot afterwards change his course without the permission of the Faculty.

Candidates for the degree of Civil Engineer pursue some studies in common with candidates for the degree of Bachelor of Science, but the divergence of the two courses commences at the very beginning.

Special Students.—For persons who may desire to devote special attention to any of the scientific studies of the School, arrangements may be made with the Professors of those branches, if the Professor in charge shall, after due investigation, decide that the applicants can pursue such studies with advantage. Every facility will be offered for their advancement in the studies selected, with the personal supervision of the Professor and full access to the collections, etc.; but it must be distinctly understood that this opportunity is intended only for those who desire to obtain proficiency in special branches, and not for students who have failed to keep up with the regular classes. Special students will be required to give evidence of satisfactory progress in their studies. To those passing successful examinations in the branches selected, certificates of proficiency will be given. The branches open to special students include geology, mineralogy, biology, physics, practical astronomy, analytical and applied chemistry, assaying, topography.

Optional Courses.—The optional courses which are offered to the students of the Academic department (p. 24) are also open to those students of the School of Science who may be fitted to pursue them with profit.

COURSES FOR THE DEGREE OF BACHELOR OF SCIENCE.

STUDIES IN COMMON.

Modern Languages.

PROFESSOR HUSS.

Instruction in Modern Languages comprises German and French as required studies throughout the entire course, the number of exercises being given in the synopsis on a later page.

In the Freshman year the student begins and completes the etymological part of German grammar. The instruction is, at the very outset, conducted with a view to familiarizing the student not only with reading and writing, but also with speaking the foreign idiom; for which latter purpose conversational exercises are constantly resorted to and especial attention is given to pronunciation. In French, the etymology of grammar is reviewed.

In the Sophomore year the instruction bears on syntax, with oral and written exercises in French and German prose, particular attention being given to the intricacies of the German period.

The Junior year and the first two terms of the Senior year are devoted to a critical study of the masterpieces of German and French literature, with lectures thereon.

Mathematics.

PROFESSOR ROCKWOOD.

The Mathematical course, which is the same for all students of the School of Science, is intended to be so framed as to supply the necessary foundation in knowledge and training for the later studies of physics and mechanics, and especially finds its natural continuation in the applied mathematics of the course in Civil Engineering. The fact that the student's mathematical knowledge is thus to be used in other departments is carefully kept in view, not only in selecting the subjects to be studied, but in arranging their order and the relative time to be devoted to each, so that he may be properly prepared for the work before him. Constant black-board practice is a prominent feature of the instruction, and gives the

student a practical as well as a theoretical familiarity with the processes, preparing him for their ready use afterward in the special investigations of his later studies.

The student is required, at the entrance examination, to be acquainted with arithmetic, including the Metric system; algebra through quadratic equations, including radicals and the theory of exponents; and with the principles of plane geometry as developed in the first five books of Chauvenet's Geometry.

During the whole of the first year the student devotes five hours a week to mathematics. In the first term he finishes the study of algebra (Wells'), discussing the various forms of series, the subject of logarithms and the theory of equations.

In the second term solid geometry and spherical geometry are studied, the text-book being Chauvenet's treatise, and the subject being illustrated by a numerous and valuable collection of models, mostly from original designs. With the geometry is combined a thorough course in mensuration with the use of logarithms, and an introduction to the elements of modern geometry. The third term is devoted to plane and spherical trigonometry. The second and third terms of the Sophomore year are devoted to the study of analytical geometry (Bowser), both of the plane and of space, with special reference to the conic sections, and the differential calculus is begun. In the first term of the Junior year the differential and integral calculus (Bowser) are studied, with five exercises a week. Throughout the whole course, the black-board drill is combined with abundant oral explanation and occasional formal lectures.

The calculus ends the course in the pure mathematics required of all students. They pass then to the applications of their work in the special departments of engineering, physics, astronomy, etc. Provision is, however, made for the further special study of the subject by the elective course in Mathematics and Mechanics.

Graphics.

PROFESSOR WILLSON.

MECHANICAL AND FREE-HAND DRAWING.—The object of the course in Free-hand Drawing is to furnish the training necessary to

the making of such sketches or designs as are ordinarily required in the practice of the engineer or biologist. It is followed by a course in practical geometrical and engineering drawing, beginning with instruction in the use of drafting instruments and materials; tinting and shading, both with pen and brush; lettering, and the representation of metals, wood, masonry, earth, tiles and other materials of architectural and engineering construction. Architectural drawings and tracings are then made, to scale, from measurements, also "working drawings" of details of machinery, bridges, etc., from free-hand sketches taken by the students. The course further includes the solution of the more important plane problems involving only the straight line and circle; the tracing of point paths in link motions; the graphical construction of the conic sections and of various trochoidal and other higher plane curves, in connection with which their most interesting geometrical properties are examined; the solution of problems in orthographic projection (first angle); axonometric (including isometric) projection, with applications in crystallography, in drawing from architectural and other models, and also from data derived from working drawings.

In conducting the above courses much of the instruction is given orally, but in connection with portions of the work the following books are used: Warren's Elementary Projection Drawing; Warren's Drafting Instruments and Operations, and either Prang's, Copley's or Ames' Alphabets. The courses occupy four two-hour exercises during each week of the first term of Freshman year and three similar exercises per week during the second term.

DESCRIPTIVE GEOMETRY AND SHADES AND SHADOWS. — A course of fifty-two exercises (two hours each) in the first term of Sophomore year, on the elementary problems of the point, line and plane in the four angles; on developable, double-curved and warped surfaces; trihedrals; the projection of shadows, etc. Text-book: Warren's Descriptive Geometry.

PERSPECTIVE AND SPHERICAL PROJECTIONS.—Three two-hour exercises per week in the third term of Sophomore year. In the course in Perspective the methods employed in the present practice of the best American architects are studied and applied. Text-books:

Warren's Descriptive Geometry; Wright's Architectural Perspective. Reference work: Ware's Modern Perspective. In spherical projections, descriptive geometry is applied in the more important methods of map projection, as the stereographic, Mercator's, polyconic, etc. Text book: Warren. Reference works: Craig's Projections, Germain's Spherical Projections.

All the courses outlined above are taken by C. E. and B. S. students alike. Students in the Civil Engineering course have additional work in graphics in the Sophomore and Senior years, regarding which see details of that course.

ELECTIVE COURSES.—Stereotomy (see course in Civil Engineering), may be elected by any student taking the elective course in General Science or in Mathematics and Mechanics.

DRAFTING ROOM AND MODELS.—The recitation and drafting room of the department of Graphics is well lighted and furnished with model cases and with desks for the accommodation of ninety-two students. The drawing courses in descriptive geometry, perspective, shades and shadows, architectural constructions (including stone-cutting), kinematics, and machinery, are illustrated by a large collection of models, which includes a number of duplicates of the Olivier ruled-surface models, two hundred from the Messrs. Schröder, of Darmstadt, complete sets of the mathematical models designed by Professors Brill and Björling, a number of the "Muret" plaster models, and several warped surface models from designs by the professor.

Surveying.

PROFESSOR MCMILLAN.

This course, occupying twenty exercises in the first term of the Sophomore year, is designed to teach the student the outlines, principles and applications of the different subdivisions of geodesy, and to familiarize him, in a general way, with surveying practice. Field exercises are intermingled with the recitations, and the subject is thus rendered more intelligible and attractive.

General Chemistry.

PROFESSOR SCHANCK.

A fully illustrated course of instruction in General Chemistry occupies two hours a week during the entire Freshman year.

Analytical Chemistry and Mineralogy.

PROFESSOR CORNWALL AND DR. MCCAY.

MINERALOGY.—The elements of crystallography are taught by a course of lectures in the second and third terms of the Freshman year. Determinative mineralogy, with the blowpipe, is taught during the whole of the first term of the Sophomore year, in a course of forty-five exercises (two hours each). In the Senior year a course of lectures on descriptive mineralogy, with practice in the determination of minerals by their physical characteristics, together with the optical study of minerals and rocks, may be elected by the students in the course in General Science.

ANALYTICAL CHEMISTRY.—During the second and third terms of the Sophomore year, the students attend lectures by Professor Cornwall, with recitations, and also work in the laboratory, under Dr. McCay, pursuing the study of qualitative chemical analysis, with Fresenius' Manual as a guide. Seventy-seven exercises (of two hours each) are given to the study of the detection of bases, together with instruction in the tests for the common acids, inorganic and organic. The subjects given during the Junior and Senior years are indicated in the Synopsis of Studies on a later page.

Botany.

PROFESSOR MACLOSKIE.

Botany is a required study during the third term of the Freshman year and the first term of the Sophomore year, and occupies sixty-seven exercises (two hours each). The work of the class is exclusively practical, and includes the examination of plants as to their morphology, histology, modes of development, and physiology. Students are taught to use their hands and eyes, to avail themselves of microscopical appliances, to master the characters of the larger orders of plants, and are exercised in phytography by describing and drawing what they see. The text-books and manuals are used for reference, but each student is required to prepare his own text-book by noting down the results of his examination of typical plants. Botanical excursions are made to the surrounding districts, and an original

thesis on some botanical subject is required of each student. Books recommended: Macloskie's Elementary Botany; Gray's Manual of Botany; Bessey's Briefer Course Botany; Arthur, Barnes and Coulter's Plant-dissection. Books of reference: Sach's Text-Book of Botany; Eichler's Blüthen-diagramme; H. Müller's Fertilization of Flowers; Le Maout and Decaisne's Botany; Bentham and Hooker's Genera Plantarum; De Candolle's Prodromus; Monographs on special groups of flowering and flowerless plants.

Biology.

PROFESSORS MACLOSKIE, LIBBEY AND OSBORN.

During the Sophomore year all candidates for the degree of Bachelor of Science have an elementary course in Zoology, consisting of thirty-seven exercises, during the second and third terms. The studies of the second term, under Professors Macloskie and Osborn, consist of lectures and practical work upon the invertebrates and vertebrates. In the second and third terms Professor Libbey gives a course in histology and the use of the microscope. During the second term of Junior year Professor Osborn gives a course of lectures upon the comparative anatomy and physiology of the birds, accompanied by an introductory course of dissection of the pigeon.

These required courses are introductory to the elective courses in Biology and Chemistry and Biology and Geology of the Junior and Senior years.

Studies Pursued in Common with the Academic Classes.

The following studies are pursued either together with the Academic classes, or essentially as stated under the corresponding titles in the Academic course, and under the same instructors.

Psychology; political economy; English literature, the essays and orations required from the Senior class in the Academic course being replaced in the Scientific course by the preparation and reading of theses on scientific subjects; rhetoric and English language; oratory; physics; astronomy; geology; human anatomy and physiology.

COURSE IN GENERAL SCIENCE.

This is one of the five courses leading to the degree of Bachelor of Science and is intended to afford instruction in science without specializing in any one department. The students electing it enter upon the special studies of the course at the beginning of the second term of their Junior year. Beside the studies required of all candidates for the degree of Bachelor of Science the following studies are pursued during the Junior and Senior years:

ANALYTICAL MECHANICS.—This is taken with the class in the course in Civil Engineering and occupies four exercises a week through the second and third terms of the Junior year.

ANALYTICAL CHEMISTRY.—This consists of laboratory work and recitations, with special reference to problems in chemical physics. It occupies three exercises a week during the first term of the Senior year.

PRACTICAL PHYSICS.—This is essentially the same as the elective course in the Senior year of the Academic department (p. 45), but is more extended, occupying two exercises a week throughout the Senior year.

PHYSICAL GEOGRAPHY.—This occupies two exercises a week through the second and third terms of the Senior year, and is taken with the Junior class of the Academic department (p. 49).

In the Senior year the student is allowed liberty of choice from the following groups, the conditions being that the studies chosen shall occupy four exercises a week throughout the Senior year, and that no group be broken:

GROUP A. *Practical Astronomy.*—This is the same as the Senior elective in the Academic department (p. 43) and occupies one exercise a week throughout the year.

GROUP B. *Mathematical Physics.*—This occupies one exercise a week throughout the year.

GROUP C. *Comparative Politics.*—This is the same as the Senior elective in the Academic department (p. 29), and occupies two exercises a week during the first term.

International and Constitutional Law.—This is the same as the Senior elective in the Academic department (p. 29), and occupies two exercises a week through the second and third terms.

GROUP D. *Physiological Psychology.*—This is the same as the Senior elective in the Academic department (p. 26), and occupies two exercises a week during the first term.

Biology and Morphology.—This consists of advanced laboratory work with Professor Macloskie and Professor Osborn, and occupies two exercises a week through the second and third terms.

GROUP E. *Archæology.*—This consists of lectures on the history of Greek Art, and occupies two exercises a week during the first term (p. 31).

History of Christian Architecture—This occupies two exercises a week through the second and third terms (p. 31).

Strength of Materials.—This is taken with the Senior class in the course in Civil Engineering and occupies two exercises a week during the first term.

Stereotomy.—This is taken with the Senior class in the course in Civil Engineering and occupies two exercises a week through the second and third terms.

COURSE IN CHEMISTRY AND MINERALOGY.

This course is designed to afford thorough instruction in analytical and technical chemistry, and students electing it enter upon the special studies of the course at the beginning of the second term of their Junior year. Beside the studies required of all candidates for the degree of Bachelor of Science, the following special studies are taken during the Junior and Senior years:

QUALITATIVE ANALYSIS.—This subject, previously pursued in the Sophomore year, is continued, so as to include the detection of inorganic and organic acids as well as bases, in complex substances.

QUANTITATIVE ANALYSIS.—A full course, including the analysis of chemical and metallurgical products, ores, fertilizers, sugar, water, etc. Volumetric methods are freely used whenever they are appropriate.

ASSAYING.—Furnace assay of ores; Bullion assays.

BLOWPIPE ANALYSIS.—Qualitative (required); Quantitative (optional).

TECHNICAL CHEMISTRY and APPLICATIONS OF CHEMISTRY to medicine and hygiene, including toxicology, analysis of potable waters, adulterations of food, disinfectants. Lectures and recitations.

MINERALOGY.—Descriptive and determinative (the latter chiefly based upon the physical characters of the minerals).

LITHOLOGY.—Descriptive and determinative, with microscopical examination of typical rocks.

In the above subjects the instruction embraces lectures by Professor Cornwall, with recitations upon the lectures and upon portions of the manuals mentioned below, and also laboratory practice (except in technical chemistry) under the Professor and Dr. McCay; the latter lecturing also upon volumetric analysis. All chemical reactions are fully explained by the use of chemical formulas, and the student must show that he understands the theory of all the operations he performs or describes.

The graduation thesis presented by the student must embody the result of the student's own work in the laboratory, whether it be experimental or analytical.

Text-books.—Fresenius' Manuals of Qualitative and Quantitative Chemical Analysis; Ricketts' Notes on Assaying; Cornwall's Blowpipe Analysis. Reference is frequently made to other works and to scientific periodicals.

COURSE IN BIOLOGY AND CHEMISTRY.

This course is recommended to students who intend afterwards to pursue the study of medicine. The special studies of the course begin with the second term of the Junior year, half of the time devoted to such studies being allotted to biology and half to chemistry. For the present year the division is made as follows:

I. BIOLOGY.—In this branch Professor Macloskie gives a series of exercises on the anatomy of type forms of invertebrate animals, on comparative physiology, and on the morphology and embryology of plants. The text-books recommended are: Packard's Zoology, Martin's Human Body, Brooks' Handbook of Invertebrate Zoology, Huxley on the Crayfish, Balfour's Comparative Embryology, Leidy's Freshwater Rhizopods, Macloskie's Elementary Botany, Bessey's Botany, Sach's Botany.

Professor Osborn, with Mr. J. W. Phillips, conducts two exercises a week during the second and third terms of the Junior year, and two a week during the second and third terms of the Senior year. This portion of the work is intended as an introduction to the study of human anatomy and embraces a thorough course in dissection and study of the skeleton of the cat and rabbit, employing the text-books of Parker (Zoötomy) and Wiedersheim (Comparative Anatomy). There is also a course of lectures upon embryology in the third term of each year, with practical work upon the development of the chick and frog.

During the second and third terms Professor Libbey conducts one exercise a week in histological methods, in which the class are required to work practically upon subjects assigned, and to present theses upon the results obtained.

II. CHEMISTRY.—This part of the course will embrace class-room exercises under Professor Cornwall and laboratory work under his supervision, with the aid of Dr. McCay. After learning how to make quantitative analyses of a number of simple and complex inorganic substances, by the use of gravimetric and volumetric methods, the students will study the properties of the various typical organic compounds, such as alcohols, carbo-hydrates, acids, etc., as well as of fats, urea, milk and other bodies of interest to the student of physiological chemistry, and will be trained in the methods of analyzing and estimating the same, reference being made to appropriate manuals and current scientific literature. Lectures will also be given upon the applications of chemistry to medicine and hygiene, including toxicology, analysis of potable waters, adulteration of food, disinfectants, and similar subjects.

COURSE IN BIOLOGY AND GEOLOGY.

The special objects of this course are to qualify students who elect it to become original investigators or teachers of the special branches of science included in it.

The special studies in biology and geology begin with the second term of the Junior year. The course embraces the following subjects:

I. ZOOLOGY, during Junior and Senior years, including comparative anatomy, osteology, and embryology; 149 exercises. Professor Macloskie.

II. COMPARATIVE ANATOMY OF THE VERTEBRATES, during Junior and Senior years; 94 exercises. Professor Osborn and Mr. Phillips.

III. HISTOLOGY, during second and third terms of Sophomore, Junior and Senior years; 60 exercises. Professor Libbey.

IV. PALÆONTOLOGY, during Senior year. Professor Scott.

Instruction is also given in the following branches of natural history:

Physiology, during Senior year; 35 lectures. Prof. Macloskie.

Geology, during Senior year; 38 lectures. Professor Scott.

Physical Geography, during Junior year; 40 lectures and recitations. Professor Libbey.

Botany (optional). Professor Macloskie.

I. ZOOLOGY.

In this branch, which occupies the second and third terms of Junior year, and continues during the whole of Senior year (two or three recitations weekly), Professor Macloskie gives a series of practical exercises with recitations on the different groups of invertebrate animals, using as type-forms for study, amœba, hydra, planaria, the earth-worm, crayfish, cockroach, mussel and ascidian; and on comparative physiology, using Martin's Human Body and Foster's Physiology, with the actual examination of the structure and functions of the organs. Other text-books used in this course are

Brook's Hand-book of Invertebrate Zoology, Huxley on the Crayfish, Packard's Zoology, Mivart on the Cat, Flower's Osteology of the Mammalia, Parker on the Shoulder Girdle, Leidy's Freshwater Rhizopods of North America, Haddon's Embryology.

II. The Comparative Anatomy of the Vertebrates.

(1) The Birds; their skeleton, muscles, brain, digestive and vascular systems, as modified for their peculiar habits of feeding and flight. This course is given in the second term of Junior year. (2) The Mammals; their anatomy studied by intercomparison and by the light thrown upon it by the anatomy of reptiles, fishes and birds. This course includes the elementary embryology of the chick and frog, also the development of the skull. The course in embryology follows the early chapters of Foster and Balfour's work, and chick embryos are obtained by means of an incubator. The works of Huxley, Balfour and Parker are employed. The principal feature of the course is the laboratory work and the constant practice in drawing from the specimens and dissections.

III. Histology.

This subject embraces a study of the normal tissues, and covers as wide a range as possible in the vertebrate kingdom. Special attention is directed to the methods of microscopical work both in the management of the instrument and in the processes of injecting, preserving, staining and mounting specimens, the student being required to perform these operations for himself. The laboratory is open at all hours for private investigation on the part of the student, and material is provided.

The regular exercises are held from 2 to 5 P. M. on Wednesday of each week during the second and third terms of Sophomore, Junior and Senior years. A fee of $10 is charged to cover the expense of mounting material, slides, cover glasses, etc.

IV. Palæontology.

This study extends through the Senior year for those students who elect Biology. It includes practical work in the E. M. Museum,

the collections of which offer every facility for the thorough pursuit of this subject. Sufficient undescribed material is in the E. M. Museum to offer those students who desire to take palæontological subjects for their graduation theses abundant opportunity to do so.

COURSE IN MATHEMATICS AND MECHANICS.

The required studies in this elective course are the same as those required of all other candidates for the degree of Bachelor of Science, but after the beginning of the second term of the Junior year, students electing the course in Mathematics and Mechanics will pursue such of the studies named below, and in such order, as may be determined from time to time by the Professor of Mathematics in the School of Science, the Professor of Mechanics and the Professor of Physics.

Rational mechanics; mathematical theory of fluid motions; mathematical theory of strength of materials; thermodynamics; higher analytical geometry and calculus; quaternions; method of least squares; stereotomy; practical astronomy; practical physics.

SYNOPSIS OF COURSES.

The studies of the courses leading to the degree of Bachelor of Science are indicated in the following synopsis, the bracketed figures denoting the number of exercises in each subject.

FRESHMAN YEAR.

First Term.

MATHEMATICS: Algebra completed (Wells'); [65]. ENGLISH: Elementary Discourse; Hunt's Discourse, (Part I); Trench (Study of Words); Lounsbury's English Language, pp. 1–90; Lectures and Essays; [26]. MODERN LANGUAGES: German: Huss' System of Oral Instruction; [39]. GENERAL CHEMISTRY: Inorganic; [26]. DRAWING: Mechanical and Free-hand; [52]. ORATORY: Lectures and Drill in Elocution.

Second and Third Terms.

MATHEMATICS: Solid and Spherical Geometry (Chauvenet); Mensuration; Plane and Spherical Trigonometry; [95]. MODERN LANGUAGES: German: Huss' System of Oral Instruction, completed; French: Delille's Condensed Instruction; [81]. GENERAL CHEMISTRY: Inorganic; [38]. BOTANY: Flowering Plants; Morphology of Plants (Macloskie's Botany); [35]. DRAWING: Projections (Warren's); [36]. MINERALOGY: Crystallography; [19]. ENGLISH: Essays.

SOPHOMORE YEAR.

First Term.

DESCRIPTIVE GEOMETRY AND SHADES AND SHADOWS; [52]. MINERALOGY: Determinative; [46]. HUMAN ANATOMY AND PHYSIOLOGY; [13]. GERMAN: Syntax; FRENCH: Syntax; also oral and written exercises in both languages; [45]. SURVEYING; [20]. BOTANY: Flowerless Plants; Herborizing; Vegetable Histology (Macloskie's Botany); Bessey's Botany, Briefer Course; (Gray's Manual of Botany); [32]. ENGLISH; Essays.

Second and Third Terms.

MATHEMATICS: Analytical Geometry of the plane and of space, (Bowser); [88]. SHADES, SHADOWS, PERSPECTIVE AND SPHERICAL PROJECTIONS (Warren, Wright); [21]. ANALYTICAL CHEMISTRY: Qualitative Analysis; [77]. ZOOLOGY; [30]. HISTOLOGY; [7]. ENGLISH: Hunt's Discourse, (Part II); ENGLISH LANGUAGE: Marsh's Lectures on English Language; Marsh's Origin and History of English Language; Lectures on English Language and Style; Essays; [24]. GERMAN: Syntax completed; FRENCH: Syntax completed; Oral and written exercises continued; [57]. ORATORY: Elocution, Declamation, Written Orations.

JUNIOR YEAR.

First Term.

MATHEMATICS: Differential and Integral Calculus, (Bowser); [65]. PHYSICS: Elementary Mechanics: Properties of Bodies;

Mechanics of Fluids; Heat; [52]. ENGLISH LITERATURE: Chaucer; Lectures; [26]. MODERN LANGUAGES: German: Lessing; French: Racine; [39]. PSYCHOLOGY; [26].

Second and Third Terms.

All Courses.—PHYSICS: Electricity and Magnetism; Acoustics; Optics; [57]. ENGLISH LITERATURE: Lectures; [38]. Modern LANGUAGES: German: Schiller; Goethe; French: Molière; Corneille; [45]. PSYCHOLOGY; [9]. MINERALOGY: Descriptive; [27]. HISTOLOGY; [12]. MORPHOLOGY; [12]. ORATORY: Composition and Delivery, Reading.

Course in General Science.—MECHANICS: Analytical Mechanics of solids and fluids; [76]. HISTOLOGY; [14]. MORPHOLOGY; [14].

Course in Chemistry and Mineralogy.—ANALYTICAL CHEMISTRY: Quantitative Analysis; [104].

Courses in Biology and Chemistry, and Biology and Geology.—BIOLOGY: Vertebrates; [24]. HISTOLOGY; [14]. MORPHOLOGY; [66].

SENIOR YEAR.

First Term.

All Courses.—ASTRONOMY: General; [39]. JURISPRUDENCE AND POLITICAL ECONOMY; [26]. MODERN LANGUAGES: German: Goethe; French: Victor Hugo; Reading scientific prose at sight; [26].

Course in General Science.—ANALYTICAL CHEMISTRY: Quantitative Analysis; [39]. PRACTICAL PHYSICS; [26]. PRACTICAL ASTRONOMY;* [13]. MATHEMATICAL PHYSICS;* [13]. COMPARATIVE POLITICS;* [26]. ARCHÆOLOGY;* [26]. PHYSIOLOGICAL PSYCHOLOGY;* [26]. STRENGTH OF MATERIALS;* [26].

Course in Chemistry and Mineralogy.—ANALYTICAL CHEMISTRY: Quantitative Analysis; [117].

Course in Biology and Chemistry.—ANALYTICAL CHEMISTRY: Quantitative Analysis; [39]. PALÆONTOLOGY; [26]. BIOLOGY: [26]. PHYSIOLOGICAL PSYCHOLOGY; [26].

Course in Biology and Geology.—PALÆONTOLOGY; [39]. BIOLOGY; [26]. MORPHOLOGY; [26]. PHYSIOLOGICAL PSYCHOLOGY; [26].

*According to the electives chosen.

Second and Third Terms.

All Courses.—ASTRONOMY: General; [9]. GEOLOGY; [42]. JURISPRUDENCE AND POLITICAL ECONOMY; [24]. MODERN LANGUAGES: studies of the first term continued through the second; [24].

Course in General Science.—PRACTICAL PHYSICS; [84]. PHYSICAL GEOGRAPHY; [84]. PRACTICAL ASTRONOMY;* [17]. MATHEMATICAL PHYSICS;* [17]. INTERNATIONAL AND CONSTITUTIONAL LAW;* [34]. HISTORY OF ART;* [34]. BIOLOGY;* [34.] STEREOTOMY;* [34].

Course in Chemistry and Mineralogy.—ANALYTICAL CHEMISTRY: Quantitative Analysis; [173].

Courses in Biology and Chemistry, and Biology and Geology.—PALÆONTOLOGY; [39]. BIOLOGY; [34]. HISTOLOGY; [34]. MORPHOLOGY; [61].

COURSE IN CIVIL ENGINEERING.

This course is designed to fit its graduates for entering the profession of civil engineering. It also provides for the instruction in any of its specialties of the graduates of this College and others who may be found suitably prepared. The course diverges from that in General Science at the beginning, but not to such an extent as to make it difficult to change, if desirable, from one course to the other before the opening of the Sophomore year.

The requirements for entrance to the Freshman Class are the same as in the course for the degree of Bachelor of Science, except that no examination in Latin is required. The regular course of study occupies four years, and the degree conferred on graduates is that of Civil Engineer (C. E.)

STATEMENT OF STUDIES.

Studies Pursued in Common with the Candidates for B. S.

The instruction in these studies is the same as stated on p. 72, *et seq.*, and under the same instructors. Modern languages (of the

Freshman and Sophomore years); English literature; rhetoric; oratory; psychology; mathematics; descriptive geometry; shades, shadows and perspective; free-hand and mechanical drawing; general astronomy; general chemistry; mineralogy (of the Freshman and Sophomore years).

Technical Studies.

The instruction in these studies is given by Professors McMillan, Brackett, Young, Rockwood, Willson, Magie, Smith and Mr. Reed.

In many of the technical studies of the course in Civil Engineering the instruction presupposes a thorough preliminary training of the student in mathematics. A thorough mastery of the ordinary divisions of this science is, therefore, indispensable to the successful study of such subjects as mechanics, physics, etc., which follow it.

Great stress is also laid in this course on the study of graphics as a science, both in its general development and in its application to the practice of designers and builders.

In cases where the necessary acquaintance with the practical details of certain departments of engineering cannot be obtained at Princeton, the students sometimes visit other localities in company with the professor in charge.

RATIONAL AND APPLIED MECHANICS and the THEORY OF MACHINES.—The instruction in these subjects covers a wide field of study, beginning with the general discussion of motions and the action of forces, and ending with the deduction of practical formulas relating to the strength or stability of different structures, the power, efficiency and strength of hydraulic, steam and air motors, and to the various problems which arise in the practice of hydraulic engineers.

In dealing with these subjects, rigidly mathematical treatment is generally used, and higher analysis is freely employed wherever it is expedient; yet proper weight is given to methods of graphic analysis, and the student's attention is especially directed to those problems in which they can be employed with marked advantage.

EXPERIMENTAL MECHANICS.—The instruction in this study consists mainly of laboratory work. Its purpose is to familiarize

the student with the physical properties of building materials; to teach him by actual experiment how to conduct tests and to deduce therefrom coefficients of strength, elasticity, etc.; how to determine coefficients of hydraulic flow and resistance; and how to gauge, by the aid of indicators and dynamometers, the power of steam and other motors. Under this head come also problems in the erection of structures.

AN ENGINEERING LABORATORY has been provided for this work. It contains the following experimental apparatus:—A torsional testing machine; a wire and cement tester; various kinds of current meters and water gauges; a Worthington water meter; a contrivance for determining the hydraulic slopes within earthen retaining banks; a flushing tank; a reaction wheel and other minor pieces of hydraulic apparatus; a double acting steam pump; a locomotive link and valve motion and a ten horse-power compound engine with condenser, indicators, gauges and a Prony brake.

The illustrative apparatus of the laboratory comprises rail sections and joints; specimens of the products of iron and steel mills and other building materials; a Sturtevant blower; models of water-wheels, of trestles and of the details of iron bridge and roof joints, of vaults and arches, and a 25-foot iron model of a single track railroad bridge, with a complete outfit of false-works and other appliances for its erection, designed especially for this College.

THE PLANNING AND CONSTRUCTION OF ENGINEERING WORKS. —This is treated in a course of lectures following the study of applied and experimental mechanics. The topics which receive special attention are given in the list of subjects under the heading "Constructions."

Great stress is laid on the application of correct principles and formulas; on the careful inspection, manipulation and preservation of materials, and on the economic features of various designs and the modes of executing them.

A large collection of lantern slides has been provided for illustrating this course. Among the more important photographic studies are a large number of views in detail of the East River suspension bridge at different stages of its progress.

An important feature of this part of the course consists of excursions for the examination of rolling mills, bridge works, machine shops, water works, etc. In these visits the class is accompanied by either the Professor or Assistant Professor of the department and every member is required to make full notes of his observations and of the instruction received during the trip.

PRACTICAL PHYSICS.—In view of the great importance of the problems of terrestrial magnetism in geodetic surveys, and also in view of the present and increasing demands upon engineers, arising from the application of electricity as a means of illumination and of transmitting energy, provision has been made for the suitable instruction of the student in these subjects, and all candidates for the degree are required to attain a high standard in them.

GEODESY.—The study of engineering field work is provided for in the different subdivisions of the course in Geodesy. The structure, adjustment and use of each instrument is made the subject of special attention, and no student is allowed to participate in any extended field operation until he has acquired a certain dexterity in handling the instruments used therein. The instruction in field work, beginning with the measurement of lines and angles, extends through different kinds of surveys in the order of their complexity and ends with problems in higher geodesy.

A special feature of the course is the stress laid on the collection and verification of field-notes by each student, and on their proper use in the preparation of different kinds of plans, maps and charts of surveys. No error is allowed, in field work or in plotting, which is not within the limits observed in current practice.

Under this head is given special instruction in hypsometry, the subject being presented by means of lectures and numerous demonstrations in the lecture room and the field.

A very full collection of instruments has been provided for the course in Geodesy. It represents the work of twelve different firms of high repute, great care having been used to avoid the duplication of instruments by the same maker.

The collection consists of a twelve-inch geodetic transit, a large plane-table with telescopic alidade and a telemeter, engineers', mining

and solar transits, wye and dumpy levels, surveyor's compasses, mercurial and aneroid barometers, sextants, heliotropes, various forms of linear measures, and a large assortment of reconnoitering instruments.

PRACTICAL ASTRONOMY.—This is taught in connection with the course in Geodesy, and the students become familiar with the most approved methods of determining time, latitude and longitude, and the true meridian, as well as with astronomical operations in general.

GEOLOGY.—This course will occupy two hours a week during the second and third terms of the Junior year, and will be more technical in character than the geological course of the Academic department, though covering nearly the same ground. Dynamical, structural and historical geology will be treated, but special attention will be given to structural geology, including petrography, with reference to its technical and economical bearings.

The text-book employed will be Geikie's Manual of Geology.

TOPOGRAPHICAL DRAWING.—The object of this course is to make the student expert in the execution, in pen work and colors, of finished plans and maps of various kinds of surveys. Except in the necessary preliminary drill, the drawings invariably represent actual surveys made by the different classes. A rigid adherence to the field notes of each survey and a high degree of finish is required in the execution of these drawings.

GRAPHICS.—The instruction in graphics includes the following branches:

Structure Drawing. A drawing of plan, elevation, end view, sections and details of some railroad bridge, or other structure of approved modern type, to scale, from measurements; (Sophomore year).

Machine Construction and Drawing. A course of lectures, recitations and practical exercises on the kinematics of machinery, with graphical representation of mechanical movements; theory of link and valve motion; screw propulsion; gearing, including the theory and use of Willis's and Robinson's odontographs; working and

finished drawings of machinery, etc. Two exercises a week in the first term of Senior year.

Text books and reference works:

Weisbach...*Kinematics and Machinery of Transmission.*	Seaton...*Manual of Marine Engineering.*
Reuleaux.....*Kinematics of Machinery.*	Unwin..... ..*Machine Design.*
MacCord.....*Kinematics or Mechanical Movements.*	Goodeve.....*Elements of Mechanism.*
Auchincloss...*Link and Valve Motion.*	Forney.....*Catechism of Locomotive.*
Stahl and Woods...*Elementary Mechanism.*	Zeuner.....*Treatise on Valve Gears.*
	Sennett.....*Marine Steam Engine.*
	Warren.....*Machine Drawing.*

Stereotomy. A course on the application of descriptive geometry to stone-cutting, practically applied by the student in cutting a voussoir of plaster to any given shape by means of templets, patterns, etc., derived from his own drawings. Text-book, Warren's Stone-Cutting. This course occupies two exercises a week in the second term of Senior year.

THESIS.—Every candidate for the degree of Civil Engineer is required to prepare and submit to the approval of the Professor of Civil Engineering, a design for, or a review of some special machine, structure, or process as a graduation thesis.

SYNOPSIS OF COURSE.

FRESHMAN YEAR.

First Term.

MATHEMATICS, ENGLISH, MODERN LANGUAGES, CHEMISTRY, DRAWING, and ORATORY, as in the Bachelor of Science course.

Second Term.

MATHEMATICS, ENGLISH, MODERN LANGUAGES, CHEMISTRY, DRAWING, and MINERALOGY, as in the Bachelor of Science course.

Third Term.

MATHEMATICS, ENGLISH, MODERN LANGUAGES, CHEMISTRY, and MINERALOGY, as in the Bachelor of Science course. GEODESY:

The Measurement of Lines; with common chains and tapes; with city surveyors' chains, tapes and rods; Chain surveys and computation of areas. *The Measurement of Angles;* with different kinds of compasses; Chain and compass surveying, including the simpler methods of determining the true meridian and magnetic declination. Theory and practice; [35].

SOPHOMORE YEAR.

First Term.

DESCRIPTIVE GEOMETRY, MINERALOGY, ENGLISH, MODERN LANGUAGES, as in the Bachelor of Science course. TOPOGRAPHICAL DRAWING: Drawings representing the conventional symbols separately and in combination; Lettering; The plotting of maps; Map of the farm survey begun; [65].

Second Term.

MATHEMATICS, ENGLISH, MODERN LANGUAGES, as in the Bachelor of Science course. STEREOTOMY: Structure drawing; [24]. GEODESY: Problems in the partition of lands; Surveys of public lands; Structure and adjustment of engineers' field instruments; [24]. TOPOGRAPHICAL DRAWING: Map of the farm survey finished; Colored topography; [24].

Third Term.

MATHEMATICS, ENGLISH, MODERN LANGUAGES, and SHADES, SHADOWS, PERSPECTIVE and SPHERICAL PROJECTIONS, as in the Bachelor of Science course. GEODESY: The measurement of angles with transits and theodolites; The computation of lines and angles from the field notes of triangulations; Levelling for bench marks, profiles and cross sections; Topographical surveying. Theory and practice; [28]. TOPOGRAPHICAL DRAWING: Contour maps; Drawings of profiles and cross sections; [7]. STEREOTOMY: Structure drawing; [7].

JUNIOR YEAR.

First Term.

MATHEMATICS, PHYSICS, ENGLISH, PSYCHOLOGY, as in the Bachelor of Science course. GEODESY: Measurement of heights

with barometer and thermometer; Hydrography; Surveying with the stadia and gradienter; Solar compass; Town, plane-table and mine surveying. Theory and practice; [39].

Second and Third Terms.

PHYSICS, ENGLISH, PSYCHOLOGY, as in the Bachelor of Science course. MECHANICS: Analytical mechanics of solids and fluids; [76]. GEODESY: Preliminary and location surveys of routes; Staking out for construction. Theory and practice; [53]. TOPOGRAPHICAL DRAWING: Hydrographic charts; Town maps; Plans and profiles of mines; Maps of landscape surveys; [33]. GEOLOGY; [38].

SENIOR YEAR.

First Term.

ASTRONOMY: General; [39]. APPLIED MECHANICS: Elasticity and strength of materials; [26]. Theory of stresses in roofs and bridges; [78]. MACHINE CONSTRUCTION and DRAWING: [26]. CONSTRUCTIONS: Roads, railroads, canals and tunnels; [26]. PRACTICAL ASTRONOMY, as in elective course of Academic department; [13].

Second and Third Terms.

ASTRONOMY: General; [9]. APPLIED MECHANICS: Stability of walls and arches; Theory of constructions; [48]. MACHINES: General theory; Hydraulic motors; Theory of steam and air engines; [30]. STEREOTOMY: Stone cutting, theory and plates; [24]. CONSTRUCTIONS: Sewerage and drainage; [24]. Water supply; [24]. Materials of structures; Dressing and preservation of materials; Foundations; Details of roofs and bridges; [62]. PRACTICAL ASTRONOMY, as in elective course of Academic department; [17]. PRACTICAL PHYSICS: Advanced study of terrestrial magnetism and electro-dynamics; [34].

NOTE.—It will be noticed that the above list of studies does not provide for regular instruction in the modern languages after the Sophomore year. It is, therefore, necessary to explain that a partial equivalent for such instruction has been provided by the use of French and German books of reference in some of the technical courses of the Junior and Senior years.

EXAMINATIONS, STANDING AND GRADUATION.

EXAMINATIONS.

Regular examinations ordinarily take place at the end of a term; each class being examined in the studies of the term. Occasionally when a course of study is finished before the close of a term, the examination takes place when that study is completed; but such examinations are not allowed to interfere with the regular exercises in other studies.

Examinations are for the most part conducted in writing, but in certain subjects are wholly or partly oral. Private examinations are not allowed except in extreme cases, and by special permission of the Faculty. Absence from an examination, except for reasons of absolute necessity, will be regarded as a serious delinquency, and a subsequent examination will not be granted except by a vote of the Faculty.

Regulations concerning the Removal of Conditions.

The minimum mark for passing examinations is sixty in every department, the maximum mark being one hundred.

A student whose mark is below fifty in more than two subjects, involving at least forty per cent. of the work of the term, is dropped from his class.

Other students who, during the first or second terms, have been conditioned, shall, if so required by their instructors in the departments in which they have failed, take tutors to be approved by the Faculty, and will have one opportunity for the removal of each condition, not later than the third Saturday of the term succeeding that in which they were conditioned. Of the students who are still found deficient, only those who have shown great industry during

the term in which the re-examinations were held, and who, in the opinion of the Faculty, are able to keep up with their respective classes, may be allowed to continue with the same, the period of probation to be determined by the Faculty in each case. The second examination, held at the end of this period, will be final in its results. Students who have been absent for reasons of absolute necessity from one or more examinations in any term will be examined on or before the second Saturday of the following term. Application for such examination, with reasons for absence, must be made on or before the first Monday of the term.

All conditions standing against a student at the end of the college year must be removed within the week after the opening of the first term of the following year. Failing to remove such conditions, the student will be required at once to join the next lower class.

STANDING.

The results of the term examinations are combined with those of the recitations to decide the relative standing or rank of the student during the term. In computing ranks, each study, elective or required, is estimated relatively to the others according to the number of hours which it occupies in the weekly schedule of lectures and recitations. The conduct of the student and his attendance also affect his standing. The maximum mark in each department is one hundred; the minimum, or passing mark, is sixty. A student whose average, as determined by the combination of his examination and recitation marks, falls below sixty, is conditioned, and in order to continue with his class must be re-examined. A report of the standing of each student is made to his parent or guardian by the Registrar of the College at the close of the first term and at the end of the year. The last report gives the student's standing for the year.

The final rank of a student is calculated from all the marks received by the student during his College course.

GRADUATION.

Students who have fulfilled the requirements of their undergraduate courses, passing satisfactory examinations in all their studies

and presenting acceptable graduation theses, are ordinarily recommended by the Faculty for the degree attached to the course they have pursued, and if the recommendation is approved by the Trustees they receive diplomas signed by the President and the Clerk of the Board of Trustees.

The graduation thesis must be finished by the second Saturday before Commencement (*i. e.* June 8, 1889), and will be publicly read and defended by the student during Commencement week.

UNIVERSITY COURSES

IN THE

ACADEMIC AND SCIENTIFIC DEPARTMENTS.

Provision has been made for courses of instruction open to resident graduates of this and other Colleges, under the following regulations:

Every instructor in the College shall be at liberty, with the leave of the Faculty, to give instruction to graduates. He shall meet with his class for at least one hour a week, and not more than three hours a week, during the Academic year, and shall require the members of his class to undergo rigid examinations on the course pursued.

Each graduate student attending instruction regularly, and passing the examinations, is entitled to a certificate stating what he has done, signed by the President in behalf of the College.

Students by pursuing these courses may also qualify themselves for the degrees, Master of Arts, Master of Science, Doctor of Philosophy, Doctor of Literature, or Doctor of Science, according to the regulations prescribed under the headings "Master's Degrees" and "University Degrees."

Each graduate student shall pay ten dollars, or such sum as the Faculty may require, for every course of instruction that he enters requiring an hour per week, and shall defray whatever expense may be incurred by the use of instruments and materials employed by him. This charge may be remitted in whole or in part where the circumstances of the student require it. All undergraduate courses of lectures or instruction are also open to graduate students without the payment of any fees except for material used.

Arrangements for the University courses should be made by application to the individual instructors.

University courses in the following subjects are announced for the present year: Theoretical ethics, English ethics, Plato and his philosophy, modern philosophy, history, English common law, Latin, pedagogics, Oriental archæology, art of the Renaissance, English language, English dramatists, Sanskrit, physics, higher mathematics, theoretical astronomy, biology.

Opportunity is also offered to graduates for work in the following subjects, in connection with the regular undergraduate courses: Anglo-Saxon, English literature, psychology, history of philosophy, metaphysics, ethics, science and religion, history of art, international and constitutional law, geology, mineralogy, biology, physics, practical astronomy, Senior mathematics, analytical and applied chemistry, assaying, topography, civil engineering.

UNIVERSITY COURSES.

Theoretical Ethics.

The President lectures one hour a week throughout the first term on Theoretical Ethics.

History of English Ethics.

One lecture a week by the President during the second term. The lectures in this course will trace the history of ethical thought in Great Britain from Hobbes to Mill. They will be critical and expository, exhibiting the leading features of representative systems, comparing different schools of thought with each other, and showing the relation they sustain to contemporary ethical discussion.

Plato and His Philosophy.

Professor Orris offers a University course in Plato, giving analyses of his dialogues, lectures and dictations on his philosophy, and instruction in the language in connection with the reading of the Phædo and parts of the Republic.

One hour a week during the first and second terms.

Readings in Modern Philosophy.

Professor Ormond devotes one exercise a week throughout the year to readings in modern philosophy. Selections are made from

the works of Descartes, Locke, Hume, Kant, Hamilton, Spencer, and other modern philosophers. The readings are accompanied with lectures and discussions.

History.

Professor Sloane conducts one exercise a week throughout the second and third terms. Subject: Parliamentary and Congressional Government.

English Common Law.

Professor Johnston gives a course of lectures, one hour a week throughout the second and third terms, on the English common law, using the first and third books of Blackstone's Commentaries on the Laws of England as a text-book. Any edition of Blackstone may be used, but Cooley's is recommended.

Latin.

Professor Packard reads with a graduate class, selections from the following Latin works: Cicero's philosophical writings, Seneca's Moral Epistles, Tertullian and Augustine; or Early Sources of Roman Law.

Pedagogics.

A University course is offered by Professor West in pedagogics during second and third terms. It consists of the study of leading educational works and systems and of the theory of education. A thesis is required in addition to the examination at the close.

Oriental Archæology.

Professor Frothingham gives a course on Oriental archæology during the first term. The central idea of the course is a study of the temple at Jerusalem, the subject leading to an investigation of the artistic and other relations of the various nations of Western Asia and Egypt.

Art of the Renaissance.

Professor Marquand conducts a course of reading on the art of the Renaissance in Italy; one exercise a week during the second term.

English Language.

A University course will be offered in second term by Professor Hunt. Beôwulf or Caedmon will be the subject.

Sanskrit.

Graduate students may begin Sanskrit with the Senior elective class, or continue studies already begun. For outline of course see p. 41.

Physics.

These courses afford opportunity for advanced work in the laboratory and for the study of theoretical physics. In the laboratory the student is either conducted through courses covering general topics, such as heat, optics, or electricity, which are similar to the courses of the Senior year, but more extended and exhaustive in their character; or, if he so desires, is encouraged to undertake for himself the investigation of special topics. In the theoretical courses the student reads, for a general survey of the subject of mathematical physics, some standard text-book such as Jamin and Bouty's Cours de Physique, and for the mathematical theory of the particular subject he is working upon, special treatises, such as Fourier's Analytical Theory of Heat, Verdet's Théorie Mécanique de la Chaleur, Verdet's Leçons d'Optique Physique, Mascart and Joubert's Electricity and Magnetism, Maxwell's Electricity and Magnetism, Kirchhoff's Mechanik, etc. Professors Brackett and Magie conduct these courses.

Higher Mathematics.

The University courses this year are in differential equations, in the theory of functions and in higher algebraic curves and surfaces. They are based on the treatises of Forsyth and Boole, Hermite and Clebsch and Gordan, and Salmon and Clebsch, respectively. Professor Fine conducts these courses.

Astronomy.

This course is conducted by Professor Young and Mr. Reed. It consists of:

(a) Practical Astronomy—the same as in the Senior elective, previously described in the course of study of the Academic department. This is open to such graduates as did not take it in their college course.

A more extended course is given to candidates for the degrees of Ph.D. or D.Sc.

(b) Theoretical Astronomy—one hour weekly through the year. This course consists in the reading of Watson's Theoretical Astronomy, supplemented by selections from Oppolzer and Klinkerfues, and includes the calculation of the orbit of a planet or comet from actual observation.

Biology.

A thorough advanced course in Biology has been established in connection with the Geological, Zoological, Botanical, and Chemical departments, the objects in view being (1) to foster a spirit of original research, (2) to qualify advanced students to become teachers. This course is open to college graduates, also to students presenting diplomas from recognized medical schools.

It is not restricted to students who are candidates for a degree, if they possess sufficient elementary knowledge to profit by the instruction.

The following subjects of instruction are arranged for:

Professor Macloskie—I. Anatomy and embryology of the higher invertebrates. II. Vegetable morphology and histology.

Professor Cornwall—Physiological chemistry.

Professor Libbey—I. The microscope and microscopic technology. II. Histology. III. Deep sea soundings and dredgings; recent methods and results.

Professor Osborn—I. Comparative anatomy of the vertebrates. II. Elements of embryology.

Professor Scott—I. Vertebrate and invertebrate palæontology. II. Advanced embryology.

These courses are of a comprehensive and elastic character, and according to the requirements and wishes of different students, include much laboratory work under the direction of the instructor. At the close of the first term, the student may select a department of special study for his thesis, which must present the results of original work.

MASTER'S DEGREES.

Master of Arts.

The degree of Master of Arts (A. M.) is conferred, three years after graduation, upon any Bachelor of Arts who is pursuing one of the learned professions (including teaching), or who, on or before May 1st of the year in which he seeks the degree, shall have submitted to a committee appointed by the Board of Trustees, a satisfactory paper, literary, philosophical or scientific.

The same degree may be conferred, two years after graduation, upon any Bachelor of Arts who shall have devoted one of the years exclusively to study in the College under the care of the Faculty, passing rigid examinations upon the studies pursued; or who shall have taken at least one University course each year for the two years and passed satisfactory examinations upon his work.

Master of Science.

Bachelors of Science who shall have devoted one year in the College exclusively to the study of such of the following subjects as the Faculty shall prescribe, and who shall have shown satisfactory proficiency therein by dissertations and examinations, may apply for the degree of Master of Science (M. S.). The prescribed subjects are: —Biology, mathematics, rational and applied mechanics, practical astronomy, applied chemistry, qualitative analysis, quantitative analysis, physics, mineralogy, drawing, modern languages.

Any Bachelor of Arts, who after examination may be found to be prepared to pursue a University course in science, may become a candidate for the degree of Master of Science on the same conditions as a Bachelor of Science.

UNIVERSITY DEGREES.

The following degrees are classed as University Degrees: Doctor of Philosophy (Ph.D.), Doctor of Literature (Litt.D.), Doctor of

Philosophy (Ph.D.) in Science, Doctor of Science (D.Sc.), and Bachelor of Divinity (B.D.).

Any person who desires a more complete statement than that given below in regard to the requirements and regulations concerning any one of the University degrees can obtain the same upon application to the President.

GENERAL REGULATIONS CONCERNING DOCTOR'S DEGREES.

Every candidate for one of the above doctorates must be a graduate of some approved college. If he has the degree of Bachelor of Arts he may apply for admission to the courses for any of the doctorates; but if he has the degree of Bachelor of Science or an equivalent degree, the courses for Ph.D. in Science and D.Sc. only are open to him.

Every applicant shall appear in Princeton on the fourth Wednesday in September to pass a preliminary examination upon certain subjects which are intimately connected with his proposed course of study and which are necessary for its successful prosecution.

The candidate having fulfilled the requirements for admission, must then adopt one of the following plans for his work:

1. He may pursue a course of prescribed study for two years, one year at least of which is to be spent in Princeton in the exclusive study of branches in his chosen department.

2. He may without residence in Princeton pursue a course of study for three years under the direction of a committee of the Faculty appointed for the purpose. This plan does not demand the exclusive employment of the candidate's time in prescribed study for the degree.

At the beginning of the course the candidate shall announce for approval by the Faculty some department as his chief subject of study, and during the first year of his course, he shall also announce for approval by the Faculty two subsidiary subjects.

At an appointed time during the last year of his course the candidate shall present a thesis on some special topic in the department which constitutes his chief subject. This thesis must present evidence of high scholarship and original research.

At the close of his course the candidate must pass a final examination on both his chief and subsidiary subjects of study. He will not be admitted to the examination unless his thesis has been accepted.

In order to meet the expenses of examinations, each person applying for a doctorate shall pay a fee of forty dollars upon first application, twenty dollars each subsequent year of the course, and fifty dollars when the degree is conferred.

If the candidate is pursuing studies in Princeton he shall pay, in addition to the above mentioned sums, the regular fees for such University courses as he may take. (See p. 99.)

Bachelor of Divinity. (B.D.)

This degree may be conferred upon a Bachelor of Arts of any approved college who shall also have completed a three years' course of theological study in any approved institution, followed by a two years' course of prescribed study in theology. This special course of study shall be prescribed, and all examinations required shall be conducted by examiners designated by the Board of Trustees.

The regulations as to preliminary examinations, chief and subsidiary subjects of study, thesis, and final examination are similar to those pertaining to the doctorates, except that only one subsidiary subject is required. Residence in Princeton is not necessary for obtaining the degree.

The fees are the same as those paid by candidates for the Doctor's degrees.

UNIVERSITY FELLOWSHIPS.

These fellowships were founded by subscription and endowment and are intended by the founders to encourage study and promote original research in the several departments to which they are assigned. They are distinguished from the college fellowships by being open to the graduates of any American college, while the appointments are made, not by competitive examination, but by a comparison of the records presented by the applicants as to their previous collegiate standing, capacity, and character.

The University Fellowships are subject to the following regulations:

1. The Fellowships are to be held for one year, but in cases of special merit they may be continued for a longer period, by recommendation of the department and sanction of the Faculty.

2. The candidates shall be graduates of not more than five years' standing of any accredited American college. An application should be accompanied with evidence of the qualifications of the applicant to pursue an independent course of study and investigation in the department concerned.

3. Appointments shall be made by the Faculty upon recommendation of the professors in the department interested, and shall be announced at Commencement.

4. All applications must be in the hands of the Registrar of the College on or before May 15th, the appointees to hold their positions for a year from the following September.

It is deemed essential to the development of the University department that the number of these fellowships should be increased to at least twenty. The following have already been founded:

THE SOUTH EAST CLUB UNIVERSITY FELLOWSHIP IN SOCIAL SCIENCE.

This fellowship pays to the holder $500 per annum.

THE CLASS OF 1877 UNIVERSITY FELLOWSHIP IN BIOLOGY.

This fellowship pays to the holder $400 per annum.

THE UNIVERSITY FELLOWSHIP IN ENGLISH.

This fellowship pays to the holder $400 per annum.

THE UNIVERSITY FELLOWSHIP IN ARCHÆOLOGY.

This fellowship pays to the holder $400 per annum.

COLLEGE FELLOWSHIPS, COMPETITIVE SCHOLARSHIPS AND PRIZES.

Besides the degrees and honors conferred in the regular course, annual fellowships, competitive scholarships and prizes are offered as special incentives to study, in the classes or departments with which they are connected.

Only matriculated students who are candidates for a degree are admitted to the competition for these fellowships, prizes and scholarships, and no one is admitted to such competition who has failed to pass satisfactorily his last preceding examination in any of the departments.

No member of any class is allowed to compete for more than one of the fellowships or scholarships offered to that class.

The names of the college fellows, scholars and prize men of each year are included in the Honor List for the year.

The funds for the college fellowships, prizes and competitive scholarships are special gifts, and the income is appropriated according to the specific instructions of the donor. They do not belong to the general funds of the College. If, therefore, there be default in the interest on the securities in which these funds are invested, the College assumes no pecuniary responsibility in the matter.

FELLOWSHIPS.

Every competitor must have been a member of the College in full standing for at least two Academic years previous to the fellowship examinations.

No student whose final rank for scholarship is below the third general group can be a competitor for any fellowship; and no student can be a competitor for the fellowship of any particular department whose average rank for the last two years of his course is below the second group in that department.

Every Fellow obtaining any one of the $600 fellowships must devote the whole time for one year to study in the department for

which the fellowship is provided, under the direction of the Professors in that department. He must reside in Princeton, and pass two rigid examinations on his work, unless by a vote of the Faculty he be allowed to study at an approved foreign university, in which case he shall from time to time furnish written reports of his work to the Professors in his department. The result of every examination and the reports of work done abroad shall be immediately reported to the Faculty. If resident in Princeton, he shall be allowed to occupy free of cost in one of the College buildings a room assigned to him by the College authorities. He shall be regarded, while occupying such place, as a resident officer of the College, and shall perform such duties in preserving order and decorum in the College edifices as the President and Dean shall assign. He shall also, when called upon, perform such duties in the department to which he belongs as may be assigned to him by the President at the request of the Professors in that department.

THE CHANCELLOR GREEN MENTAL SCIENCE FELLOWSHIP.

This fellowship, originally founded in 1870 upon the annual payment of $600 by the late Chancellor Henry W. Green, was permanently endowed in 1878 by a gift of $10,000 by his widow.

The income of this fund, to be paid quarterly, will be awarded to that member of the Senior class who shall write the best essay on Theories of Knowledge, with an examination of Realism, Idealism and Agnosticism (to be given in on or before June 1), and who shall stand highest at a special examination to be held in June, on the following subjects:

A general knowledge of the philosophies of Plato, Aristotle, Descartes, Locke, Leibnitz, Hume, Kant and Hamilton. Cicero De Officiis, Book III, *De Contentione Honesti et Utilis*. Theoretical ethics, psychology and metaphysics (McCosh's Intuitions, Part I, II, III, Book 1). The syllogism, and induction.

THE CLASSICAL FELLOWSHIP.

The Classical fellowship has been, for a time, without funds. The sum of $600, payable quarterly, was previously awarded to the successful competitor. A portion of that sum, and possibly the full amount, will be awarded to that member of the Senior class who shall

stand highest at a special examination, to be held in June, 1889, on the following subjects:

In Greek.

Translation from English into Greek. Translation of Prose Greek at sight. The *Alcestis* of Euripides, Aristophanes' *Birds*, Plato's *Charmides* and *Lysis*. The Philosophy of Plato.

In Latin.

Translation from English into Latin. Translation of Latin at sight. Cicero *De Natura Deorum*, and The Relations of Roman Philosophy to Roman Religion. History of Latin Literature.

THE CLASS OF 1860 EXPERIMENTAL SCIENCE FELLOWSHIP.

This fellowship was founded in 1870 upon the sum of $10,000 subscribed by the Class of 1860. A deficiency of income, resulting from the depreciation of the value of the securities in which the principal was invested and the lowering of the rate of interest, is paid, by the consent of the donor, from the income of the Magee Professorship of Mining and Engineering, founded by George J. Magee, Esq., of the Class of 1860.

The sum of $600, to be paid quarterly, will be awarded to that member of the Senior class who shall stand highest at a special examination, to be held in June, on the following subjects, viz: 1. The theory of heat. 2. (a) The geology of coal, oil and gas. (b) The history of mammals and birds. 3. Table salt and its derivations.

THE J. S. K. MATHEMATICAL FELLOWSHIP.

The J. S. K. Fund was established in 1873 upon the sum of $11,000, given by a gentleman in New York, $600 of the income of which is devoted to this fellowship, and $200 to the Freshman First Honor prize.

The sum of $600, to be paid quarterly, will be awarded to that member of the Senior class who shall stand highest at a special examination to be held in June, on the following subjects: Analytical geometry; differential and integral calculus.

THE BOUDINOT FELLOWSHIPS.

These fellowships are founded upon a bequest of Dr. Elias Boudinot, of New Jersey, and yield each the annual sum of $200.

THE HISTORICAL FELLOWSHIP.—The sum of $200, to be paid quarterly, will be awarded to that member of the Senior class who shall write the best essay on The English and American Theories of Citizenship, and pass the best examination in June next on the War of 1812. The essay to be presented on or before June 1.

The general subject of examination in 1890 will be The Practice and Theory of Government in the American Territories. The essay will be on The Development of the Secession Policy from 1856 to 1861.

The Fellow shall from time to time during the following year, as may be required by the Professor of History, give evidence by written papers that he is pursuing an approved course of historical investigation.

THE MODERN LANGUAGE FELLOWSHIP.—The sum of $200, to be paid quarterly, shall be awarded to that member of the Senior class who shall pass the best examination in June, on the following subjects:

A comprehensive knowledge of the French and the German descriptive grammars. Also, the origin and historical development of these languages. In Literature—The mediæval epics of France and Germany, with the sources of their inspiration. Also, their lyrical poetry and its representatives; the leaders of the classical drama in France in the 17th century; the current of thought in the 18th century—its exponents and results. A comparative view of Germany's intellectual state before and after the Reformation. Significance of the "Sturm und Drang" period with its chief participants. The current of thought in Germany from the time of her mental emancipation from foreign influences to the present day. Reading at sight of any given author of the classical or the recent period. An essay of not less than four pages (foolscap) in one of these languages. The examination will be conducted both orally and in writing.

The Fellow shall from time to time during the following year, as may be required by the Professor of Modern Languages, give

evidence by written papers that he is reading such a course as the Professor may approve.

THE E. M. BIOLOGICAL FELLOWSHIP.

The Biological fellowship will be awarded to that student who shall stand highest at a competitive examination on subjects assigned by the Professors of the Biological department.

The competition for this fellowship will be open to any member of the Senior class in either the Academic or Scientific department, or to any college graduate who shall have pursued during the preceding year, the graduate course in Biology at Princeton, and who shall, in the opinion of the examiners, be deemed competent to pursue the subject advantageously.

This fellowship conveys the use of a table in the National Seaside Laboratory at Wood's Holl, Mass., together with all the facilities afforded for the collection and study of animal life during the season favorable for such investigations. In the winter months following this laboratory work the Fellow will pursue his studies at Princeton, and will be required to prepare and submit a thesis embodying the results of his summer researches.

The examination for this fellowship in 1889 will be held in June upon the following subjects:

1. The structure of the vascular cryptogams and bryophytes.
2. The anatomy and embryology of the crustacea.
3. The structure and development of the vertebrate nervous system. (Huxley's Anatomy of the Vertebrates and Balfour's Comparative Embryology.)
4. The histology of the digestive tract.

PRIZES AND COMPETITIVE SCHOLARSHIPS.

ALEXANDER GUTHRIE McCOSH PRIZE.

The interest of $1,000 will be given to that member of the class last graduated who shall be adjudged by the Professors of Mental and Moral Science to have written the best thesis on Mental Philosophy, giving evidence of scholarship or original research. The essay is to be given in to the President of the College within one year after the writer of it graduates; that is, for the present year, on or before June 12, 1889.

THE LYNDE PRIZES.

Three prizes—the income of $5,000, contributed by Charles R. Lynde, Esq.—will be awarded by a committee appointed by the Faculty, to the three successful competitors in a debate on the Tuesday evening preceding Commencement. The competitors are six members of the Senior class—representatives of the Literary Societies—selected by committees appointed by the Societies respectively, from their own members in the Faculty.

THE BAIRD PRIZES.

Through the liberality of Charles O. Baird, Esq., the following prizes, representing the income of $6,000, will be given to those who excel in the oratorical exercises of the Senior class, viz.: The Baird prize of $100, to the best speaker of those who have ranked among the first six writers in any two of the three departments of English Literature, Rhetoric and Oratory; a prize for oratory, of $50, to the best speaker, exclusive of the Baird Prizeman, of those who, in the same departments, have ranked among the first twelve writers; a prize for delivery, of $30, to the best speaker exclusive of the two just mentioned; also, a prize for poetry, of $50; and two prizes of $40 and $30, respectively, for the best and the second best written disputations.

THE CLASS OF 1859 PRIZE.

The interest of $2,000, given by the Class of 1859, will be awarded to that member of the Senior class who shall write the best essay on Dr. Samuel Johnson, and pass the best examination on Shakespeare's Coriolanus. The essay must be handed in on or before June 1, and the examination will be held in June. The subject of the essay for the Class of 1890 will be James Russell Lowell, as a Poet.

THE GEORGE POTTS BIBLE PRIZES.

The yearly interest of $1,000, given in 1867 by Mrs. Sarah A. Brown, expended in the purchase of two copies of Matthew Henry's Commentary on the Bible, will be presented to the two best Biblical scholars of the Senior class at the end of their College course.

THE LYMAN H. ATWATER PRIZE IN POLITICAL SCIENCE.

This prize, being the annual interest on the sum of $1,000, contributed by the Class of 1883, was instituted as a memorial of Rev. Lyman H. Atwater, D.D., LL.D., Professor of Political Science. It will be given to that member of the Senior class who shall be adjudged by the Professors of Political and Social Science to have passed the best examination and written the best essay. The subject for the examination in 1889 will be The American Doctrines of Citizenship. The subject for the essay will be The Restriction of Immigration. The essay must be ready June 1, 1889; the date of the examination will be announced at that time.

PRIZE IN ARCHITECTURE.

Mrs. Norman White has established in memory of her son Frederick Barnard White of the class of 1883 a prize in architecture yielding $50 each year. It is open to the entire Senior class and will be given for the best essay and oral examination. The subject of the essay for this year is The Origin of the Gothic Style. The subject of the examination will be The History of Gothic Architecture. The essay should be presented before May 15, 1889.

THE WOOD SCHOLARSHIP.

The sum of $150, the income of a legacy of Dr. George B. Wood, will be awarded to that member of the Junior class who shall stand highest for the Junior year.

JUNIOR ORATOR MEDALS.

Four gold medals, or books of equal value, will be awarded by a committee appointed by the Board of Trustees, to the four successful competitors in an oratorical contest on the Monday evening before Commencement. The competitors are eight members of the Junior class—four from the Cliosophic and four from the American Whig Societies—selected by committees appointed by the Societies respectively, from their own members in the Faculty.

THE MACLEAN PRIZE.

The Maclean prize, founded by the will of the late Henry A. Stinnecke, consisting of the sum of $100, will be given to that one of

the orators chosen by the Literary Societies from the Junior class, who shall on the Monday evening before Commencement pronounce the best English oration.

The committee of judges will be composed of the Professor of Rhetoric and two graduates of the College appointed by the Board of Trustees.

DICKINSON PRIZE.

The Dickinson prize, founded by John Dickinson, Esq., of New Jersey, in 1782, consisting of a medal of the value of $60 (or its equivalent in money), will be awarded to that member of the Junior class who shall write the best dissertation upon The Methods of Discovering Truth in the Various Sciences. The dissertation to be presented on or before October 15, 1889.

CLASS OF 1876 MEMORIAL PRIZE FOR DEBATE IN POLITICAL SCIENCE.

This prize is to be given annually by the Class of 1876 to the successful contestant in a debate on a subject of current interest in American politics, to be held on Washington's Birthday, said prize to be the interest on $1,000. The competitors, four in number, one from each class, are to be chosen by a vote of the respective classes.

THE STINNECKE SCHOLARSHIP.

The Stinnecke Foundation was established in 1870 by the will of the late Henry A. Stinnecke, of the Class of 1861, and was supplemented by a bequest received in 1876 from his aunt, Miss Maria Stinnecke. The income is divided between the Stinnecke scholarship of $500 and the Maclean prize of $100.

The Stinnecke scholarship, of the annual value of $500, tenable during the College course, unless forfeited by neglect of study, "will be given to that person who, having entered the Sophomore class, shall pass the best examination at the opening of the session in September, 1890, in the Odes of Horace, the Eclogues of Virgil, and the Latin Grammar and Prosody, as well as the Anabasis or Cyropædia of Xenophon and the Greek Grammar." Students of the College who have been members of the Freshman class, as well as new students entering the Sophomore class, will be admitted to such examination. The committee of examiners is appointed by the Board of Trustees.

THE CLASS OF 1861 PRIZE.

The interest of $1,200, given by the Class of 1861, will be awarded to that member of the Sophomore class who shall pass the best examination in June next on those portions of the mathematical course of the Sophomore year which shall be especially designated by the Professor of Mathematics.

THE FRANCIS BIDDLE SOPHOMORE ESSAY PRIZE.

This prize, the yearly interest of $500, will be given to that member of the Sophomore class, not below the fourth group in his English studies, who in the judgment of a committee appointed by the Faculty, shall write the best English essay of the year.

THE FRESHMAN FIRST HONOR PRIZE.

A prize of $200, part of the income of the J. S. K. Fund, to be paid in quarterly installments during the following year, will be awarded to that member of the Freshman class who, having entered said class at the beginning of the College year, shall, at the end of the year, be reported to the Trustees by the Faculty as having attained the "highest average grade" in scholarship, provided he pursue his studies in this College and maintain a good standing during the Sophomore year. No student who has been suspended from College, or who has been put upon his last probation, shall be eligible to this prize.

SOCIETIES.

Literary Societies.

The Cliosophic and American Whig Societies originated early in the history of the College. They are conducted by the undergraduates, but also include in their organization graduates and officers of the College. Both possess halls containing the rooms for meeting, reading rooms and valuable libraries of over 8,000 volumes each. They both pursue courses of literary exercises, award numerous prizes for orations, essays and debates, and grant diplomas to their respective graduates.

A generous competition for College honors has always prevailed between them. On the evening before Commencement representatives of the Societies from the Senior class engage in a public debate—on the preceding evening representatives from the Junior class engage in a competition in oratory. The details respecting the Lynde debate and the Junior orations will be found on pp. 113, 114.

These Societies are considered a part of the educational appliances of the College, and students are advised to join them.

The Engineering Society.

This is an organization conducted by the undergraduates of the Engineering Course, although its membership includes students in other departments of the College, and graduates.

Meetings are held weekly in the reading room of the Society in University Hall, and the exercises are of a literary, scientific and technical character.

The Philadelphian Society.

This is a society composed of undergraduates, united by a covenant of mutual religious faith and sympathy. It was founded in the year 1825, and has always been an active and successful agency in promoting the religious life of the College. Devotional meetings are held on Thursday and Saturday evenings, under its direction,

usually conducted by members of the Faculty. Murray Hall, the building belonging to the Society, was erected from a bequest left for the purpose by Hamilton Murray of the class of 1872. It contains, besides the room for worship, a reading room supplied with religious books and periodicals.

The St. Paul's Society.

The St. Paul's Society is an association similar in nature and aim to the Philadelphian, and is intended to be helpful, devotionally and practically, to those students in the College who have been accustomed to the worship of the Protestant Episcopal Church. It has weekly meetings, conducted by the students, and ordinarily a course of sermons is delivered annually in Trinity Church under its auspices.

BUILDINGS, LABORATORIES, COLLECTIONS.

The buildings are situated in a campus of about fifty-five acres and are grouped around Nassau Hall, which dates back nearly to the foundation of the College, having been erected in 1756. One wing of this building is still occupied by students. The central and eastern portions contain the geological museums and lecture room. The School of Science building, the Chancellor Green Library, Dickinson Hall, Murray Hall and several of the dormitories have been erected within the last eighteen years. The Marquand Chapel, the gift of H. G. Marquand, Esq., of New York, was built in 1882. The academic lectures and recitations are conducted mainly in Dickinson Hall, while the scientific lecture rooms and laboratories are principally in the building of the John C. Green School of Science, and in the new Biological Laboratory, presented by the Class of 1877. The Museum of Historic Art, which is in course of erection, will contain the lecture rooms of the department of Art and Archæology. The students—except by special permission of the Faculty—reside in the College dormitories—the west wing of Nassau Hall, East College, West College, Reunion Hall, Witherspoon Hall, Edwards Hall and University Hall.

THE CHANCELLOR GREEN LIBRARY.

The College library began with the College itself, in a bequest of books by Governor Belcher. The first catalogue, printed in 1760, shows that it then consisted of more than twelve hundred volumes. It suffered much during the Revolution and it was burnt, with Nassau Hall, in 1802. The gifts of many liberal friends soon re-established it, and it slowly advanced to 9,313 volumes in 1854. The want of resources for its increase kept it small, until the Elizabeth fund of $50,000 was created by Mr. John C. Green in 1868. When the present library building was erected by him, in 1872–73, the col-

lection contained about 25,000 volumes. Since that time its progress has been rapid, and it now consists of more than 65,000 volumes. The liberality of those who represent his estate has permitted an average yearly increase of 5,000 volumes.

The library is probably strongest in the departments of mathematical, physical, natural and mental science, but it is rich, also, in philology and literature. Few libraries surpass it in respect to works on the origin and early history of our language and our race. Generous efforts have been made to enrich it with the serial issues of scientific associations abroad. A collection of books on fine arts may be seen in a separate room. The income of the Library Fund, appropriated to the departments by a committee of the Faculty, is to be expended under the direction of the Professors of the respective departments.

The arrangement of books upon the shelves is by topics, and is fully exhibited in the library catalogue, of which two copies lie on each of four tables near the desk. A manuscript appendix, constantly increasing, is accessible on application at the desk. The analysis of scientific periodicals is continually proceeding, forming a sort of "Poole's Index" for science, and the manuscript results, kept at the desk, are accessible to every Professor. Books serving to illustrate topics named by Professors for essays required from the students are temporarily withdrawn from circulation and kept by themselves to be read in the library; but such books may be borrowed for a night. A large collection of books of reference is kept constantly on the shelves, consisting of twenty encyclopædias, seventy periodicals and the dictionaries of twenty languages. A bulletin containing the titles of books bought during the preceding year, is printed early in every fall term, kept on the library tables, and given to every applicant.

At the west end of the building is a reading-room for the Faculty, furnished with more than fifty periodicals of high character. Students are admitted on application at the desk, and they may borrow the past issues of each periodical when a new number has reached the table.

Library Hours.

The Library is open every secular day; for the delivery and exchange of books from 10 A. M. to 1 P. M., and from 2 to 4 P. M.;

for the consultation of books from 10 A. M. to 1 P. M., and from 2 to 5 P. M. In midwinter the want of light shortens the library day one-half hour at the end. The use of books is allowed, under the rules, to all the students. Resident graduates have the same privileges in the library as undergraduates.

SEMINARY LIBRARY.

The library of the Princeton Theological Seminary, which contains 48,000 volumes, is open to students of the College for consultation and loan of books on every secular day from 10 A. M. to 1 P. M.

MUSEUMS.

The E. M. Museum of Geology and Archæology.

This Museum, occupying the central and eastern wings of Nassau Hall, contains collections which are distributed in the three general departments of Geology (including Mineralogy), Palæontology and Archæology. Their arrangement is especially adapted to the purposes of comparative study.

In the GEOLOGICAL DEPARTMENT a special room contains a unique collection of over 5,000 specimens of erratic boulders and drift materials from Switzerland. There is also a special room devoted to the typical rocks and fossils of the State of New Jersey. A collection of the typical rocks of the State of New York represents the series as described in the Geological Survey of that State.

There is in this department a large collection of minerals, containing about 2,600 specimens, bequeathed to the College by the late Archibald MacMartin, of New York. The perfection of the specimens, and the number of localities represented in each family, make this collection one of especial value.

The collections of the PALÆONTOLOGICAL DEPARTMENT fill two large halls, with extensive galleries. The central hall, or Synoptic Room, is especially designed and arranged with reference to the general course in Geology. There are mounted casts of the gigantic reptiles and mammals of the secondary, tertiary and quaternary ages. Around these the characteristic fossils of each of the great ages of life

form as many groups, which follow each other in chronological order, while within each group the fossils are arranged according to their zoological affinities. The typical fossils selected agree, as far as possible, with those mentioned in Dana's Geology, as characteristic of different geological periods.

The upper or eastern hall contains the main collections for advanced students; on the platform are the skeleton of a mastodon, an Irish deer, a cave bear, and some of the extinct birds of New Zealand; also the skulls of uintatherium and loxolophodon, and a remarkably complete skeleton of cervalces. Surrounding the room is a very perfect collection of vertebrate and invertebrate fossils from Europe and America, illustrating the vertebrate and invertebrate forms of all the geological epochs. Included in this series are the fine eocene and miocene fossils, procured in the West by the various Princeton collecting parties. There is also a series of fossil insects and plants from Colorado. Altogether the number of fossils, not counting duplicates, is 9,000.

ARCHÆOLOGICAL DEPARTMENT.—Here are relics of the Swiss lake dwellings, and numerous implements of stone and bronze from Denmark; also several hundred flint instruments from most of the classical localities of the palæolithic and neolithic ages of France.

America is represented in the pottery and human remains of the mound builders, by several hundred specimens of Mexican and Peruvian pottery, and by a number of recent Indian relics. The interesting ethnological collection of objects, chiefly from Alaska and New Mexico, which Dr. Sheldon Jackson presented to the Theological Seminary of Princeton, has been transferred to this Museum by the Trustees of that institution, with the consent of the donor. The Archæological Gallery contains also a series of models of the cliff-ruins of the Southwest, executed under the direction of Dr. Hayden.

Below the eastern hall are the lecture and working rooms.

Biological Collections.

The biological collections have been chiefly made from the endowment fund of the John C. Green School of Science. There have also been many smaller donations to the Museum from time to time. The collections are placed in the large upper hall of the School

of Science building, and are at present especially rich in osteological specimens. On the same floor are the laboratory and working rooms of the Curator of the Museum. The collection of vertebrates includes a large number of mounted and disarticulated skeletons of the mammals, reptiles, birds and fishes, series of the birds of New Jersey and of other districts of North America, carefully mounted, and alcoholic specimens. A feature of the ornithological collection is the very large number of unmounted bird skins, arranged for the purpose of comparative study of the plumage, beak and feet. Among the invertebrates are a series of ascidians, echinoderms, molluscs, crustaceans, insects, worms, corals, sponges, and microscopic preparations of small forms. The whole collection has also been catalogued and numbered. Students may apply to the Curator for access to the catalogue and cases containing the skeletons.

The Herbarium is on the second floor of the School of Science building, and is arranged as a museum of the botanical collections, also as a working laboratory for students. The plants are classified according to Bentham and Hooker's *Genera Plantarum*, and include specimens from the different sections of the United States, and from South America, Europe and Australia. There are extra specimens for laboratory use, and dissecting and compound microscopes, anatomical instruments, section cutters, models, diagrams and books of reference.

During the last year the collections have been increased by a donation of valuable corals through Mr. H. T. Woodman, a collection of shells presented by William Lawrence MacTier, Esq., of Philadelphia, a set of South American plants purchased from Dr. H. H. Rusby, and six of Zeiss's microscopes.

The zoological charts of Leuckhart and Nitsche, and Kny's botanical charts have been purchased; also a set of Zeiss's new apochromatic objectives.

The Museum of Historic Art.

The plans for the new Museum of Historic Art have been completed and the erection of the central portion of the building has been begun. The building is to be fire-proof throughout. It will contain the lecture rooms of the School of Art, and also galleries for the

reception of casts and collections. When completed it will receive the valuable Trumbull-Prime collection of pottery and porcelain, as well as several collections of antiquities which have already been given by friends of the College. It is hoped that the Museum may become the receptacle of various objects of art contributed by those who are interested in the advancement of the study of art in the College.

LABORATORIES AND APPARATUS.

Physical Laboratory and Apparatus.

The physical laboratory is fitted up with tables and other arrangements to accommodate about twenty students at once. Besides the appliances usually employed in lecture demonstrations, the cabinet of apparatus contains all the instruments of precision required in the experimental courses.

The following deserve especial mention:—A fine balance by Becker, sensitive to one milligramme under a load of twenty kilogrammes. A cathetometer (Grunow), with scale of one metre. A dividing engine and comparator (Rogers). A cylinder chronograph, for all time observations in the laboratory, in electrical communication with the standard clock of the astronomical observatory. A diapason chronograph (Koenig), for minute intervals of time. Pendulum apparatus, of both Borda's and Kater's forms. A spectrometer (Fauth) with 18-inch circle, reading by microscope to single seconds. Ditto (Grunow), with smaller circle, reading to 10″. Ditto (Stackpole), reading to 30″. A number of diffraction gratings (Rutherford and Rowland), ruled upon glass and speculum metal. A large spectroscope, with dispersive power of twelve prisms (Browning). Sir William Thomson's absolute electrometer and quadrant electrometer (White). Lippmann's capillary electrometer. A set of accurate resistance coils, and standard condenser (Elliot). A large number of galvanometers suited to the different requirements of the laboratory. Sets of standard thermometers; apparatus for calorimetric inquiries; photometers, etc.

Chemical Laboratories.

The laboratory and cabinets of the department of General Chemistry are fully equipped for the illustration of the courses in the two branches of general and applied chemistry.

There is a large laboratory for the department of Analytical Chemistry, and connected with this are the Professor's and Assistant's rooms, acid room, weighing room and store room, provided with the best appliances. There is also an assay laboratory, with crucible and muffle furnaces. These laboratories are all in the School of Science building, and each student has a desk for his own use, with cupboards and drawers in which he can lock up such apparatus as is supplied to him individually.

Mineralogical Laboratory and Collection of the School of Science.

The laboratory contains desk-room for fifty students. Each desk is fitted with gas connections for blowpipe work in determinative mineralogy, and contains a locked drawer for the student's apparatus.

There are three cabinets of minerals. The principal one contains over five thousand specimens, embracing nearly every mineral species. Two smaller cabinets, one with labeled and the other with unlabeled minerals, are provided for practice with the classes, and to these two cabinets the students have free access.

An interesting collection of minerals has been presented to the College in the past year by William Lawrence MacTier, Esq., of Philadelphia. A number of valuable specimens have also been presented by an anonymous donor, through Mr. H. T. Woodman.

There is also a collection of 240 specimens of typical rocks; together with a large number of Fuess's rock sections, as well as sections from other sources, for the study of lithology.

The laboratory is provided also with section cutters, grinding lathes, and other appliances for the special study of minerals and rocks; including a complete Groth's polarizing apparatus with goniometer, a large Babinet goniometer, Norremberg's polarizing apparatus, Rosenbusch's microscope, and minor apparatus.

Histological Laboratory.

This laboratory is situated on the upper floor of the west wing of Nassau Hall. It is fitted to accommodate twenty-two students at a time, each of whom is provided with the requisite instruments, reagents and staining fluids for the study of the various tissues. The microscopes have been selected with a view to convenience in practical work. A large private collection of slides, illustrating the general subject of histology, is also placed at the disposal of the students, as well as books of reference and American and foreign publications. The laboratory is open at all hours to its regular students.

The Class of 1877 Biological Laboratory.

This building, which is situated at the east end of Dickinson Hall, has been completed and is now ready for use. It was presented to the College by the Alumni of the Class of 1877 at their decennial reunion. It is designed for the advanced practical and experimental courses in anatomy, embryology, and physiological psychology. The main morphological laboratory, upon the second floor, will be equipped for the instruction of undergraduate students, with a private room adjoining for the instructors in charge. The first floor comprises the embryological laboratory, intended for the use of University students engaged in research, and is in charge of the Class of 1877 Fellow in Biology; also the psychological laboratory for instruction and experimental work in physiological psychology; also the laboratory library. The basement is designed for aquaria. The laboratory will be open to students during the day and in the evening subject to special regulation.

ASTRONOMICAL OBSERVATORIES.

The Halsted Observatory.

This is appropriated to scientific work, chiefly in the department of astronomical physics. The building is of stone, with an iron dome, 39 feet in diameter. The power for moving the dome and its sliding shutter is furnished by a gas engine. The principal instrument is the great equatorial of 23 inches aperture and 30 feet focal length, made by the Clarks of Cambridge. It is provided with all

the usual micrometers, spectroscopes and other accessories on a scale proportional to the instrument. The building contains also two clocks and a chronograph.

The Observatory of Instruction.

This establishment is devoted entirely to the use of students, and is fully equipped for its purpose. It possesses an equatorial (by Clark) of 9½ inches aperture, with a full complement of spectroscopic and other accessories. It has also a 9-inch reflector; a meridian circle with telescope 4 inches in diameter; two transit instruments with 3-inch telescopes, both of them arranged for use as zenith telescopes; a 3-inch prime-vertical instrument; a chronograph; two standard clocks, and two chronometers. There are also a number of sextants, and all the other subsidiary apparatus required for carrying out the work detailed on page 43.

GYMNASIUM.

The gymnasium was built in 1869 by Mr. Robert Bonner and Mr. Henry G. Marquand. It is thoroughly equipped with all the apparatus necessary for a complete physical training. It has hot and cold shower and plunge baths, dressing rooms, bowling alleys, and besides the main hall, a room for base ball practice. There is also a gallery for visitors. The gymnasium is open from 7 to 8 A. M., 12 M. to 1:30 P. M., 5 to 6:30 P. M., on every day except Saturday, when it is open from 12 M. to 6:30 P. M. During the second term exercise in the gymnasium is required of all members of the Sophomore and Freshman classes, three times a week; the remainder of the year attendance is optional. Classes in the use of Indian clubs and calisthenics are held every day during the noon and afternoon hours. These exercises are adapted to all grades of strength, and are such as to maintain and improve in health all who take part in them, health being the primary and strength the secondary object of exercise. Special exercise on the various apparatus is under the personal supervision of the Superintendent, who is also at the command of any student for advice in regard to physical development and the laws of health. During the fall term there is an outdoor athletic meeting for prizes; in the spring term a gymnastic contest also for prizes, and at Commencement a gymnastic exhibition.

GENERAL COLLEGE ORDERS.

TERMS AND VACATIONS.

The year is divided into two terms of fourteen weeks each and one of nine weeks.

The first term of the present College year (1888–9) began on Wednesday the 12th of September, 1888, and ends on Wednesday, the 19th of December. The second term begins on Wednesday, the 2nd of January, 1889, and ends on Wednesday, the 10th of April. The third term begins on Wednesday, the 17th of April, and ends on Wednesday, the 19th of June, 1889—the day of the Annual Commencement.

Students are required to return to College on the first day of each term, and absence from any College exercise at the beginning of a term counts double.

Students are not allowed to leave College during term-time without express permission obtained from the Faculty or from the officer of the class to which they belong.

COMMENCEMENT EXERCISES.

THE ANNUAL COMMENCEMENT takes place on Wednesday preceding the last Wednesday in June.

THE BACCALAUREATE SERMON of the President to the graduating class is delivered in the College chapel on the Sunday preceding Commencement.

The Class Day exercises of the graduating class and the Junior oratorical contest are held on Monday preceding Commencement. The reading of theses by the graduating class of the School of Science, the annual meetings of the Literary Societies, the annual meeting of the Alumni Association of Nassau Hall, and the Lynde prize debate are held on Tuesday.

PUBLIC WORSHIP.

Prayers are offered in the Marquand chapel every week-day morning. In these services members of the Faculty officiate in turn.

Divine service, under the superintendence of the President, is held in the Marquand chapel, on Sunday, at 11 o'clock, A. M.

The service is conducted, alternately, by the Dean and some one of the clerical members of the Faculty.

Religious services are held in the chapel every Sunday afternoon at 5 o'clock.

Permission to attend divine service elsewhere than in the chapel, on special occasions, is granted on application to the President. For permission to attend regularly one of the churches of the town on Sunday morning, a written request from the parent or guardian of the applicant must be presented to the President.

RELIGIOUS INSTRUCTION.

Biblical instruction is given during the week, as follows:

To the Senior class by the Dean: The development of doctrine in the New Testament.

To the Junior class by Professor Ormond: The Book of Acts.

To the Sophomore Academic class by Professor Orris: St. John's Gospel in Greek; by Professor Winans: St. Luke's Gospel.

To the Freshman Academic class by Professor Hunt: General introduction to the study of the Scriptures, the poetical Books of the Old Testament and the parables of our Lord.

To the Freshman and Sophomore classes in the School of Science by Professor Macloskie: Typology of the Old Testament and the life of Christ.

ATTENDANCE UPON COLLEGE EXERCISES.

The several classes ordinarily attend three recitations or lectures every day, except Saturday, when there are but two College exercises.

Every undergraduate student is required to attend all College exercises in the chapel, to be present during the lectures and recitations of his class, and is expected to avail himself of the privileges

of the library and gymnasium upon the conditions and at the hours appointed.

Each student is allowed a certain limited number of absences from chapel and recitations during the term. When a student's absences exceed this gratuity they are charged against his gratuity for the next term, or otherwise dealt with by such discipline as the Faculty may direct.

CHARITABLE FUNDS.

THE RICHARDS FUND.—A bequest of Mrs. Esther Richards, of New York, amounting to $2,970.32, for the benefit of candidates for the ministry. Received in 1790.

THE LESLIE FUND.—A bequest of James Leslie, of New York, a graduate of the class of 1759, amounting to $10,677.49, for "the education of poor and pious youth with a view to the ministry of the Gospel in the Presbyterian Church." Received in 1792.

THE HODGE FUND.—A bequest of Hugh Hodge, of Philadelphia, of a house and lot on Market street, above Second (No. 205), "to be held by the Trustees in trust, to lease out from time to time, and the rents to be applied to the support and education of pious youth for the ministry." Received in 1805. The net income for the current year will amount to about $750.

THE VANARSDALE FUND.—A bequest of Robert VanArsdale, of Newark, N. J., of the Class of 1826, amounting to $3,000, "in trust for promoting charitable instruction in the College of New Jersey, according to the discretion of the Faculty." Received in 1875.

ENDOWED SCHOLARSHIPS.

1–3.	The COLT Scholarships, founded by Roswell Colt, of Paterson, N. J.,	$3000
4.	The NEWKIRK Scholarship, founded by Matthew Newkirk, of Philadelphia,	1000
5.	The JOHN JOSEPH RANKIN Memorial Scholarship, founded by his father Wm. Rankin, of Newark, N. J.,	1000
6.	The CRESWELL Scholarship, founded by A. Creswell, of Kishacoquillas, Pa.,	1000

7. The ISAAC R. RANKIN Scholarship,
founded by Isaac R. Rankin, of Newark, N. J., 1000
8. The MUSGRAVE Scholarship,
founded by Rev. George W. Musgrave, D.D., 1000
9. The COGSWELL Scholarship,
founded by Rev. Jonathan Cogswell, D.D., 1000
10. The GREEN Scholarship,
founded by Hon. Henry W. Green, LL.D., 1000
11–15. The LENOX Scholarships,
founded by James Lenox, of New York, 5000
16. The HODGE Scholarship,
founded by Dr. Hugh L. Hodge, of Philadelphia, 1000
17. The A. B. BAYLISS Scholarship,
founded by A. B. Bayliss, of Brooklyn, 1000
18. The HENRY J. VAN DYKE Scholarship,
founded by George L. Sampson, of Brooklyn, 1000
19. The GREGORY Scholarship,
founded by Dudley S. Gregory, of Jersey City, 1000
20. The FIRST PRESBYTERIAN CHURCH OF PEEKSKILL
Scholarship, founded by members of the Church, 1000
21. The VAN VORST Scholarship,
founded by Hon. John Van Vorst, of Jersey City, 1000
22. The JANEWAY Scholarship,
founded by the Rev. Jacob J. Janeway, D.D., 1000
23. The PRESBYTERIAN CHURCH OF HUNTINGTON, L. I.,
Scholarship, founded by the ladies of the Church, 1000
24. The BACKUS Scholarship,
founded by E. F. Backus, of Philadelphia, 1000
25. The VAN SINDEREN Memorial Scholarship,
founded by Mrs. and Miss Van Sinderen, of Brooklyn, 1000
26. The NORRIS HALSTED Scholarship,
founded by Gen. N. Norris Halsted, of Newark, N. J., 1000
27. The MACLEAN Scholarship,
founded by Drs. John and George M. Maclean, 1000
28. The HAINES Scholarship,
founded by Richard T. Haines, of Elizabeth, N. J., 1000
29. The JACKSON Scholarship,
founded by Hon. John P. Jackson, of Newark, N. J., 1000
30. The TUTTLE Scholarship,
founded by Joseph N. Tuttle, of Newark, N. J., 1000
31. The GERTRUDE N. WOODHULL Memorial Scholarship,
founded by her son, Dr. John N. Woodhull, of Princeton, 1000
32. The NATHANIEL W. TOWNSEND Memorial Scholarship,
founded by his daughter, Mrs. Daniel Haines, 1000
33. The FIRST PRESBYTERIAN CHURCH OF BRIDGETON
Scholarship, founded by members of the Church, 1000
34. The SKIDMORE Scholarship,
founded by Joseph P. Skidmore, of New York, 1000

35. The SPENCER Scholarship,
founded by L. S. Spencer, 1000
36. The JEREMIAH D. LALOR Memorial Scholarship,
founded by a friend, 1000
37. The MARQUAND Scholarship,
founded by Frederick Marquand, of Southport, Conn., 1000
38. The FIRST PRESBYTERIAN CHURCH OF TRENTON
Scholarship, founded by members of the Church, 1000
39. The CAMERON Scholarship,
founded by Hons. Simon and Donald Cameron, 1000
40. The SECOND PRESBYTERIAN CHURCH OF ELIZABETH
Scholarship, founded by members of the Church, 1000
41. The C. S. BAYLISS Scholarship,
founded by Charles S. Bayliss, of Brooklyn, 1000
42. The ELIZA MUSGRAVE GIGER Memorial Scholarship,
founded by her son, Prof. George M. Giger, D. D., 1000
43. The BLAIR Scholarship,
founded by James Blair, of Scranton, Pa., 1000
44. The PENNINGTON Scholarship,
founded by Dr. Samuel H. Pennington, of Newark, N. J., 1000
45. The FENTON Scholarship,
founded by Aaron Fenton, 1000
46. The TRASK Scholarship,
founded by Alanson Trask, of Brooklyn, 1000
47. The WITHINGTON Scholarship,
founded by Chandler Withington, of Kingston, N. J. 1000
48. The NEWARK Scholarship,
founded by the will of Henry Rogers, of Newark, N. J., 1000
49. The CARTER Scholarship,
founded by Aaron Carter, of Newark, N. J., 1000
50–54. The HOLMES Scholarships,
founded by Capt. Silas Holmes, of New York, 5000
55. The COLWELL Scholarship,
founded by Stephen Colwell, of Philadelphia, 1000
56. The AITKEN Scholarship,
founded by John Aitken, of New York, 1000
57. The BULLARD Scholarship,
founded by Mrs. P. Bullard, 1000
58. The CHARLES DICKINSON HAMILL Memorial Scholarship,
founded by his father, the Rev. Samuel M. Hamill, D.D., 1000
59. The CYRENIUS BEERS Memorial Scholarship,
founded by his daughter, Miss Julia Beers, 1000
60. The JACOBUS Scholarship,
founded by Peter Jacobus, of Newark, N. J., 1000
61. The MATTHEW B. HOPE Scholarship,
founded by the Trustees as an acknowledgment of the services of Prof. Hope in raising an endowment of over $100,000, 1000

62. The JOHN MACLEAN Scholarship,
founded by a friend of President Maclean, 1000
63. The WHITE Scholarship,
founded by William White, Esq., 1000
64. The ELIZABETH VAN CLEVE Scholarship,
founded by the Hon. C. S. Green, of Trenton, N. J., 2000
65. The BLOOMFIELD Scholarship,
founded by the Hon. Amzi Dodd, of Bloomfield, N. J., 1000
66. The FLAGLER Scholarship Fund,
The gift of Henry M. Flagler, of New York City, 1500
67. The JAMES MCCOSH Scholarship,
founded by friends of President McCosh in N. Y. City, 1000
68–69. The WISTAR MORRIS and CHARLES MORRIS WOOD Scholarships, founded by their father, the Rev. Chas. Wood, of Germantown, Pa., 2000
70. The CLASS OF 1856 Scholarship,
founded by members of the Class of '56, 1000
71. The CLASS OF 1841 Scholarship,
founded by members of the Class of '41, 1000
72. The ALBERT DOD BROWN Memorial Scholarship, founded by his mother, Mrs. Susan D. Brown, of Princeton, N. J., 1000
73–77. The JONATHAN DICKINSON Scholarship,
The AARON BURR Scholarship,
The JONATHAN EDWARDS Scholarship,
The SAMUEL DAVIES Scholarship,
The SAMUEL FINLEY Scholarship,
founded by a friend of the College, 5000

The above Scholarships are for the benefit of students in the Academic Department, with the exception of the ELIZABETH VAN CLEVE Scholarship which may be assigned to a student in the School of Science.

About sixty Scholarships were founded between the years 1853 and 1858, mainly through the efforts of President Maclean and Professor Hope. The last fourteen were founded since the beginning of the Academic year 1885–6; the last five in 1888.

PECUNIARY AID.

The College has for many years remitted, on application, the tuition of candidates for the ministry, of the sons of ministers, and also of other applicants who present satisfactory testimonials of good moral character and of more than ordinary intellectual ability, with the assurance that the aid requested is absolutely needed. No candidate for admission to College who is unexceptionable morally and intellectually will be refused admission because of inability to pay the charge for tuition.

In consequence of this liberal policy the amount of tuition remitted has increased until it is now more than double the entire income from the scholarship and charitable funds. If this policy is to be continued a large increase of these funds is urgently demanded. The Trustees have accordingly appointed a joint committee of members of the Board of Trustees and of the Faculty, to increase the Scholarship Fund to $150,000. *This effort is commended to the attention and favor of the Alumni and other friends of the College.*

Although the charge for tuition, since the first scholarships were founded, has been advanced from $60 to $100, scholarships in the Academic department for the benefit of *candidates for the ministry, sons of ministers, or other students needing assistance*, may be founded by the payment of $1,000,—the scholarship to be designated as the donor may direct.

Scholarships may be founded by the payment of $1,000, and designated as the donor may direct, the income from which will be accepted as payment of the tuition in the Academic department of *any student* to whom the donor may assign it, for *four years*—to be subsequently assignable by the Faculty.

Applications for scholarships, or for aid from the charitable funds, should be made to Professor J. T. Duffield.

EXPENSES.

The following is the Schedule of the College expenses for 1888–9:

Board, 37 weeks	$ 3.00 to $7 per week.
Washing, 37 weeks	50 cents per week.
Tuition, Academic	100.00 per annum.
Tuition, School of Science	120.00 per annum.
Tuition, Special course in Analytical Chemistry	120.00 per annum.
Tuition, extra for Laboratory Chemistry, Senior elective	18.00 per annum.
Room rent (according to location of rooms).	30.00 to $175 per annum.
Fuel deposit (according to location of rooms).	17.00 to $26 per annum.
Gas deposit (according to location of rooms).	24.00 to $42 per annum.
Servants and Public Rooms (Library, Gymnasium, Museums, etc.)	40.00 per annum.
Matriculation Fee, payable on entrance	5.00
Graduation Fee, payable third term, Senior year	12.00.

For other special courses than that in Analytical Chemistry arrangement may be made upon consultation with the Professor in charge.

The charges for fuel and gas are approximations based upon the greatest amount used. An account of the actual consumption is kept with each room, and the exact charge is adjusted at the end of the year. The charge for fuel includes the cost of kindling, and the labor of carrying coal, making fires, etc.

Apparatus Deposits.—Students pursuing certain courses in the School of Science are required to make deposits to pay for apparatus injured or destroyed. At the end of the term any excess in favor of the student is placed to his credit on the bill for next session. The deposits in the courses for B.S. are:—Sophomores, first term, $12; second term, $12; Juniors taking any work in chemical analysis, second term, $12; Seniors electing the course in Chemistry and Mineralogy, first term, $15; second term, $10; other Seniors taking any work in chemical analysis, first term, $12. The deposits in the course for C. E., all payable in the first term, are:—Freshmen, $3; Juniors, $6; Seniors, $4; all of the foregoing being for apparatus in the Engineering Department; also, Sophomores, $5 for the Engineering Department, and $12 for blowpipe apparatus. Academic Seniors, electing Laboratory Chemistry, will deposit $5, payable in the first term.

ESTIMATES OF ANNUAL EXPENSES.

ACADEMIC DEPARTMENT.

Attention is specially called to the following approximate estimate of the necessary annual expenses for a student occupying an unfurnished room in College, without including books, clothes, traveling or vacation expenses:

	Min.	Medium.	Max.
Board, 37 weeks, $3.00 to $7.00	$111 00	$175 00	$259 00
Washing, 37 weeks, at 50c. per week	17 50	17 50	17 50
Tuition and Public Room Fees	140 00	140 00	140 00
Matriculation Fee (on Entrance)	5 00	5 00	5 00
Room Rent	30 00	60 00	175 00
Fuel	10 00	20 00	30 00
Gas		10 00	25 00
Total	$313 50	$427 50	$651 50
Deduct for Students on Scholarship	100 00		
See page 133.			
	$213 50		
Approved Candidates for Ministry	30 00		
	$183 50		

College Bills.

All College expenses, including board and washing, must be paid in advance to the Treasurer of the College.

Students are required to call at the Treasurer's office in the course of the first ten days of each session, and to give information as to their place of boarding, etc., so that their bills can be made out. All bills must be paid within the first four weeks of the session. Failure to comply with this rule will deprive the student of the privileges of the College until payment is made, unless excused by special vote of the Faculty.

When a student enters College before the middle of the session, he shall pay in full the usual College charges for that session, with the exception of the charges for board and washing; if he enter after the middle of the session, he shall pay one-half. For board and washing he shall pay in proportion to the time.

When a student leaves the College, whether voluntarily or by dismission, before the middle of any session, one-half of the charges for tuition and public rooms for that session shall be refunded. But in the case of temporary absence and subsequent return, although the absence be for more than half a session, no such rebate shall be granted.

When a student is dismissed from College for any cause, the advance deposit for board, washing, fuel and gas, beyond the time of his dismission, shall be refunded to his parent or guardian.

When at the end of the first or second sessions the amount of the advance deposit proves to be in excess of the sum required to defray the board, washing or room bills of any student, the excess shall be credited on his bill for the next session. At the end of the College year the amounts overpaid by the members of the *graduating class* for board, washing, room rent, fuel, or gas shall be refunded by the Treasurer to the student's parent or guardian. The parent or guardian of *all undergraduates* will be advised of the amount of excess to the credit of his son or ward, and such amount will be *carried over to his credit on the bill of the first session of the following year.* In case of withdrawal or dismissal from College of any undergraduate, at the end of the College year such excess will be refunded by the Treasurer to the parent or guardian, when

informed by the Clerk of the Faculty that such undergraduate has been withdrawn or dismissed from College.

RULES RESPECTING RENTAL AND ALLOTMENT OF ROOMS.

(*a*) Exchange of rooms can be made only by students occupying College rooms. (See rule 12.)

(*b*) Buying furniture does not give purchaser a right to a room. (See rule 14.)

(*c*) Furniture in a room can be bought or sold—not the room. (See rule 14.)

(*d*) Exchanges are not transfers, and no transfers are allowed. (See rule 13.)

(*e*) Students who room in town and purchase furniture in College rooms cannot have the rooms transferred directly to them—the rooms must go through "drawing." (See rule 13.)

1. Whenever a student desires to occupy a room in one of the College buildings, he and his parent or guardian shall be required to sign a room-agreement, engaging to pay the rent and charges of said room for the ensuing Academic year, or for the remainder of the current year, as the case may be.

2. The tenure of all rooms so engaged shall be subject to the following conditions as regards damages and repairs, viz.: (1.) All damage done to a room beyond the ordinary wear and tear, shall be made good as soon as possible at the expense of the occupant. *This provision includes the breakage of glass whether by accident or design.* The occupant shall employ the proper College workmen and pay the cost of the repairs at once to the Treasurer. (2.) The occupants of a room shall deposit with the Curator the sum of twenty-five cents for every key furnished, which amount shall be refunded on return of the keys.

3. Students now occupying rooms, or to whom rooms shall hereafter be allotted, may have the option of retaining such rooms until the end of their College course, on condition of annually notifying the Treasurer of their intention of retaining their rooms for the following year, and signing a new room-agreement before

May 15th; otherwise their rooms will be considered as vacated, and will be included in the annual allotment.

4. In the annual room-drawing, rooms shall be drawn only by the *bona fide* intending occupant. In case of absence through sickness, of any such intending occupant, a proxy duly authorized, in writing, may act in his stead. The student so drawing a room, either in person or by proxy, will be held for the rent of such room for the entire ensuing year unless released by the proper authority.

5. Rooms becoming vacant at or near the close of the College year shall be assigned to new occupants, by lot. The members of the Junior and Sophomore classes who desire a choice shall draw lots first; then, the Freshmen. As soon as the drawing is completed the rooms must at once be selected in order of priority of choice.

6. No student will be entitled to the room allotted him unless the room-agreement shall have been signed and returned to the Treasurer before June 5th.

7. New students shall have the choice of any remaining rooms in the order of their application, after admission into College, on condition of immediately signing the room-agreement, and depositing with the Treasurer the rent for the next ensuing term.

8. Every student who draws or retains a room is expected to occupy the same, and pay the rent and charges, or his share thereof, until the end of the College year, unless sooner released by the proper authority.

9. A student who expects to be absent on leave for a term may be released from the above obligation, by notifying the Treasurer before the beginning of the term, and by giving up the room; but no abatement or drawback for room rent will be made to any student vacating his room during a term, unless by express direction of the Faculty.

10. Whenever, by any contingency, one of two room-mates is permitted or obliged to cancel his room-agreement, the remaining occupant must vacate the room at the end of the current term, unless he agrees to pay the whole rent, or provides a room-mate who shall join him in signing a new agreement for the remainder of the College year. When one of two occupants of a room is a

member of the Senior class, the room shall become vacant when the Senior graduates, and be subject to the provisions of Rule 5, except in cases where the joint occupancy has continued for at least one year.

11. When rooms are vacated during the first or second term the rent shall be paid to the end of the term (see Rule 9), at which time the students who may have registered their names as applicants for vacancies shall draw for them by lot.

12. Exchange of rooms, or substitution of one occupant for another, must be by authority of the Treasurer, and any student moving into a room, without authority previously obtained, will be liable to a fine of $10, and be required to vacate the room. Such exchanges can only be made at the end of the first or second term, or the first three days of the second or third term.

13. No tenant of a College room who is permitted or compelled to vacate such room will be allowed to transfer directly or indirectly any interest in or title to the room.

14. When a student vacates a room he shall immediately remove the furniture therefrom unless the student to whom the room is assigned elects to purchase the same. In case a sale is agreed upon between the parties, the price to be paid by the purchaser shall be ascertained by deducting from the cost price of the furniture a discount of twenty per cent. per annum for the time the same has been in use by the vendor; provided that the price to be paid for the furniture in a room shall in no case exceed $200. All sales shall be approved by the Treasurer before the same are finally consummated.

15. Students leaving College, or otherwise vacating their rooms, shall be allowed to store their furniture in a room assigned by the College authorities, under the charge of a salesman appointed by the College, where it may be offered for sale. Furniture remaining unsold at the end of three months, if not removed by the owner, will be disposed of at public auction to the highest bidder.

STUDENTS OF THE COLLEGE.

RESIDENT GRADUATE STUDENTS.

Matthew Gay Allison,	Dalhousie,	Windsor, N. S.
William Alexander Annin,	Princeton,	Rolla, Mo.
William Sullivan Bannerman,	Toronto,	Princeton, N. J.
Alvin Blackwell,	Princeton,	Pennington, N. J.
William Ellsworth Bryce,	Centre,	Indianapolis, Ind.
William Caldwell,	S. W. Pres. Univ.,	Clarksville, Tenn.
James Alexander Clarke,	Lafayette,	Stillwater, N. J.
Fulton Johnson Coffin,	Dalhousie,	Mt. Stewart, P. E. I.
Charles Randolph Compton,	Wooster,	Monroe, O.
James Dennison Corwin,	Adelbert,	Cleveland, O.
Hector William Cowan,	Princeton,	Hobart, N. Y.
William Poyntz Craig,	Parsons,	Chicago, Ill.
Winthrop More Daniels,	Princeton,	Dayton, O.
Henry Glen Dean,	Union,	Schenectady, N. Y.
Hugh Trowbridge Dobbins,	Princeton,	West Berkeley, Cal.
James Walter Doughty,	Princeton,	Circleville, O.
Fenwick Williams Fraser,	St. Francis Xavier,	Elmbank, N. S.
Frank Leonard Fraser,	Manitoba,	Morden, Can.
John Fraser, Jr.,	Princeton,	Philadelphia.
Edward Greer Fullerton,	University of Penna.,	Philadelphia.
James Preston Green,	Wabash,	Crawfordsville, Ill.
William Oscar Groce,	Tallapoosa,	Trenton, S. C.
Charles Sumner Hedges,	Lincoln,	Baltimore, Md.
Gerritt Dirk Heuver,	Lake Forest,	Cedar Grove, Wis.
Edwin Mortimer Hopkins,	Princeton,	Carmel, N. Y.
George B. Hussey, Ph.D.,	Johns Hopkins,	East Orange, N. J.
William Mann Irvine,	Princeton,	Bedford, Pa.

Fred. Wolcott Jackson, Jr.,	Princeton,	Newark, N. J.
Benjamin Canfield Jones,	Lincoln,	Oxford, Pa.
S. F. Jones,		Tuckerton, N. J.
Daniel Cothi Jones,	Trevecca,	Curt, South Wales.
Truman Cooper Kenworthy,	Penn,	Oskaloosa, Ia.
James Robert Kerr,	University of N. B.,	Bacabec, N. B.
Robert Hutchinson Kirk,	Princeton,	Lancaster, Pa.
Mark Harvey Liddell,	Princeton,	Clearfield, Pa.
José M. Lopez-Guillen,	Neuchâtel, Switzerl.,	Madrid, Spain.
John Edward Lynn,	McGill,	Annville, Pa.
Charles F. W. McClure,	Princeton,	Boston, Mass.
John Berridge McCuish,	Park,	Loch Lomond, N. S.
John K. MacGillivray,	Manitoba,	Winnipeg, Can.
Evander Bradley McGilvary,	Davidson,	Jonesboro, N. C.
Charles Ellsworth McGinnis,	Princeton,	Joy, Ill.
Joseph McIntyre,	Union,	Princeton, N. J.
James T. MacLean,	Park	Princeton, N. J.
George McLeod,	Dalhousie,	Yarmouth Co., N. S.
Malcolm James McLeod,	Dalhousie,	Eldon, P. E. I.
William McNichol,	Univ. of N. B.,	New Mills, N. B.
Thomas S. McWilliams,	Centre,	Mt. Sterling, Ky.
Joseph E. Maxwell,	Princeton,	Princeton, N. J.
Wilber Clayton Mickey,	Wooster,	Wooster, O.
Arthur McQuiston Miller,	Princeton,	Eaton, O.
Edward de Moss Miller,	Princeton,	Gerrardstown, W. Va.
Marion Mills Miller,	Princeton,	Eaton, O.
Robert Henry Milligan,	Manitoba,	Winnipeg, Can.
William Murchie,	University of N. B.,	Durham, N. B.
Luther Albertus Oates,	Davidson,	Rock Hill, S. C.
Lewis Bayles Paton,	University of N. Y.,	E. Orange, N. J.
William Salter Porter,	University of Penna.,	Media, Pa.
Thomas Newson Potts,	Randolph-Macon,	Williamsburg, Va.
Ralph Earl Prime, Jr.,	Princeton,	Yonkers, N. Y.
Thomas Wright Pulham,		Newark, N. J.
William Rankin,	Princeton,	Newark, N. J.
Charles Harmann Reinsberg,	Sem'y of Niesky, Silesia,	Salem, N. Y.
George Reynolds,	Princeton,	Orange, N. J.
Peter Rioseco,	Princeton,	Philadelphia.

William Henry Runyon,	Princeton,	Millington, N. J.
R. C. H. Sinclair,	Queens, Ont.,	Princeton, N. J.
Charles Sidney Smith,	Princeton,	Washington, D. C.
Francis E. Smith,		Pittsburgh, Pa.
William Craig Templeton,	Park,	Pinckneyville, Ill.
Alfred W. Thompson,	Dalhousie,	Durham, N. S.
Henry Dallas Thompson,	Princeton,	Berkeley, Cal.
John H. Thompson,	Hamilton.	Princeton, N. J.
William McC. Thompson,	Queens, Ont.,	Princeton, N. J.
Harry Walter Tolson,		Philadelphia.
Jacob N. Trompen,	Hol. Chr. Ref. Ch.,	Gr. Rapids, Mich.
Selby Frame Vance,	Lake Forest,	Lake Forest, Ill.
Charles Gracer Vardell,	Davidson,	Summerville, S. C.
William Walter Warne,	Pierre,	Elmira, Ill.
Edgar William Way,	Univ. of Georgia,	Walthomville, Ga.
Walter Henry Waygood,	Lafayette,	Albany, N. Y.
Edward Ebenezer Weaver,	Wooster,	Canton, O.
Charles Hurlbut Whitaker,	Princeton,	Princeton, N. J.
Henry Alex. White, Ph.D.,	Washington and Lee,	Lexington, Va.
Frank Edwin Williams,	Wesleyan,	Chesapeake City, Md.
Frank Stiles Woodruff,	Princeton,	Elizabeth, N. J.
John Newton Young,	Park,	Graham, Mo.

NON-RESIDENT GRADUATE STUDENTS.

John Stevens Parker,	Princeton,	Beverly, N. J.
William Andrew Robinson,	Princeton,	South Bethlehem, Pa.
Frederick Newman Rutan,	Princeton,	Newark, N. J.

GRADUATE STUDENTS, ... 90

UNIVERSITY COURSES.

I. DEPARTMENT OF PHILOSOPHY.

1. *Metaphysics*, THE EX-PRESIDENT.
2. *Ethics*, THE PRESIDENT.
3. [*History of English Ethics*, THE PRESIDENT.]
4. *Plato's Philosophy*, PROF. ORRIS.

5. *Modern Philosophy*, PROF. ORMOND.
6. *Historical Methods and Systems*, PROF. SLOANE.
7. *Common Law*, PROF. JOHNSTON.
8. [*Art of the Renaissance*, PROF. MARQUAND.]
9. *Oriental Archæology*, PROF. FROTHINGHAM.
10. [*Pedagogics*, PROF. WEST.]
11. *Physiological Psychology*, PROF. SCOTT.
12. *The History of the Sciences*, PROF. SHIELDS.

II. DEPARTMENT OF LITERATURE.

13. *Sources of Early Roman Law*, PROF. PACKARD.
14. *English Dramatic Literature*, PROF. MURRAY.
15. [*Anglo-Saxon*, PROF. HUNT.]
16. *Sanskrit*, PROF. WINANS.

III. DEPARTMENT OF SCIENCE.

17. *Differential Equations*, PROF. FINE.
18. *Higher Geometry*, PROF. FINE.
19. [*Theory of Functions*, PROF. FINE.]
20. *Astronomy*, PROF. YOUNG.
21. *Physics*, PROF. BRACKETT.
22. *Math. Physics*, PROF. MAGIE.
23. *Lab. Chemistry*, PROF. CORNWALL.
24. *Mineralogy*, PROF. CORNWALL.
25. *Biology*, PROF. MACLOSKIE.
26. *Hist. Palæontology and Embryology*, PROF. SCOTT.
27. [*Comparative Vertebrate Anatomy*, PROF. OSBORN.]
28. *Histology*, PROF. LIBBEY.
29. *Civil Engineering*, PROF. MCMILLAN.

OPTIONAL COURSES.

SENIOR YEAR.

1. *Modern Philosophy*, PROF. ORMOND.
2. *Roman Law*, PROF. JOHNSTON.
3. [*Constitutional History of United States*, PROF. JOHNSTON.]
4. *Justiniani Institutiones*, PROF. PACKARD.
5. [*English Literature*, PROF. MURRAY.]
6. [*Geology*, PROF. SCOTT.]
7. [*Embryology*, PROF. SCOTT.]
8. [*Physical Geography*, PROF. LIBBEY.]
9. [*Histology*, PROF. LIBBEY.]
10. *Physiological Psychology*, PROF. SCOTT.]
11. *Italian*, PROF. WESTCOTT. (Open to Juniors also.)

JUNIOR YEAR.

1. *Greek Mythology*, PROF. MARQUAND.
2. *Italian Painting*, PROF. FROTHINGHAM.
3. *Suetonius*, PROF. PACKARD.
4. *Æschylus*, PROF. ORRIS.
5. [*Thucydides*, PROF. WINANS.]
6. [*Latin Poets*, PROF. WEST.]

SOPHOMORE YEAR.

1. *English*, PROF. HUNT.
2. *French Drama*, PROF. WESTCOTT.

FRESHMAN YEAR.

1. [*Cornelius Nepos*, MR. RODDY.]

NOTE.—The courses in brackets are offered during the second and third terms.

UNDERGRADUATES IN ACADEMIC DEPARTMENT.

SENIOR CLASS.

Maitland Alexander,	New York City,	10 S E
William Patterson Atkinson,	Philadelphia,	15 S E H
Thomas Leroy Aughinbaugh,	Pittsburgh, Pa.,	Mr. J. Durner's
Richmond Ogston Aulick,	Washington, D. C.,	5 S W
Andrew Banks,	Mifflin, Pa.,	10 N R H
Alfred Hamilton Barr,	Dillsburg, Pa.,	10 N R H
Samuel McKean Bayard,	Philadelphia,	20 N W
Eugene Walker Belknap,	Newburgh, N. Y.,	3 E M W H
David Bovaird, Jr.,	Bradford, Pa.,	3 W W H
Randolph Desha Breckinridge,	Lexington, Ky.,	5 S E
John Milton Brooks,	Cleveland, O.,	10 E M W H
John Prentiss Browning,	Cooperstown, N. Y.,	2 W M W H
Arthur Audley Brownlee,	Indiana, Pa.,	7 N W
George Herbert Carter,	Huntington, N. Y.,	31 N E H
William Sabin Chase,	Akron, O.,	18 S E
Isaac Parker Coale,	Arch Spring, Pa.,	10 S E H
Henry Workman Conner,	Charleston, S. C.,	R, U H
James Denis Denègre,	St. Paul, Minn.,	11 N E
Harry Gurnee Drummond,	Newark, N. J.,	9 S R H
William Edward Durell,	Woodstown, N. J.,	17 N E
John Seymour Emans,	Poughkeepsie, N. Y.,	21 S E H
Llewellyn Stover Fulmer,	Philadelphia,	20 U H
Sidney Dale Furst,	Lock Haven, Pa.,	12 N E
James Oliver Gayley,	Philadelphia,	11 N E H
William James George,	Scroggsfield, O.,	6 N E
Joshua Brush Gesner,	Linden, N. J.,	6 N M R H
George Elliott Gillespie,	Elizabeth, N. J.,	7 N M R H

Malbone Watson Graham,	Dubuque, Iowa,	4 N M R H
John Charles Gray,	Washington, D. C.,	14 and 15 U H
Norman Grey,	Salem, N. J.,	25 S E H
Alexander Reading Gulick,	Princeton, N. J.,	24 N
Albert Halstead,	Cincinnati, O.,	8 S W
Edward Ringwood Hewitt,	New York City,	20 W W H
Stanley Carnahan Hughes,	Richmond, Ind.,	15 S M R H
James Hunter,	New York City,	6 N E
Frank Chalmers Huston,	Brimfield, Ind.,	1 S E
Harry Clay Irons,	Lakewood, N. J.,	7 S M R H
William Sherman Jenney,	Syracuse, N. Y.,	3 E M W H
Frank Snowden Katzenbach, Jr.,	Trenton, N. J.,	5 N R H
Victor Kauffmann,	Washington, D. C.,	10 N W
William Howard King,	Princeton, N. J.,	Mrs. King's
Furman Kneeland,	Brooklyn, N. Y.,	11 N E
Graham Lee,	Rock Island, Ill.,	Mrs. Mershon's
Robert Henry Life,	Rye, N. Y.,	24 N
Alvin Carr McCord,	Minneapolis, Minn.,	7 S E H
David Walter McCord,	Minneapolis, Minn.,	7 S E H
George Grenville Merrill,	New York City,	Mr. Goldie's
William Laing Merrill,	New York City,	Mr. Goldie's
Frederick Shepard Minot,	New York City,	6 S W
Clarence Blair Mitchell,	Lakewood, N. J.,	13 W W H
Lewis Seymour Mudge,	Princeton, N. J.,	Dr. Mudge's
Fred Neher,	Troy, N. Y.,	5 N R H
Henry Graves Noel,	St. Louis, Mo.,	5 S M R H
William Miller Paxton, Jr.,	Princeton, N. J.,	2 E W H
Clifford Chandler Pollison,	Waverly, N. J.,	17 N W
John Williams Proudfit,	Baltimore, Md.,	17 E W H
Edmund Francis Quinn,	Eaton, O.,	13 S M R H
Edward Watson Rand,	Baltimore, Md.,	15 E W H
Edmund Yard Robbins,	Asbury Park, N. J.,	16 N
Philip Ashton Rollins,	Philadelphia,	17 U H
Thomas Henry Powers Sailer,	Philadelphia,	10 S M R H
William Hedges Scofield,	Budd's Lake, N. J.,	25 N
Willard Blossom Segur,	Pittsfield, Vt.,	7 N E H
Irenæus Mayberry Shepherd,	Trenton, N. J.,	20 U H
William Walter Smith,	New York City,	17 N

Robert Eliot Speer,	Huntingdon, Pa.,	19 W W H
Gormly J. Sproull,	Brooklyn, N. Y.,	10 S R H
Thomas Sproull,	Brooklyn, N. Y.,	10 S R H
James Frederick Stebbins,	Geneva, N. Y.,	12 N E
Charles Wadham Stevens,	New York City,	14 and 15 U H
Duncan Warren Taylor,	Princeton, N. J.,	Mrs. Taylor's
John Alvin Terhune,	Saddle River, N. J.,	15 E W H
David Ripley Todd,	Altamont, Kan.,	2 S E
John Reynard Todd,	Altamont, Kan.,	2 S E
Cornelius Doremus Van Wagenen,	New York City,	16 U H
Howard Crosby Warren,	Montclair, N. J.,	10 E M W H
Bertram Howard Waters,	Pittsburgh, Pa.,	16 U H
James Edwards Wyckoff,	Punjab, India,	9 S R H

SENIORS, ... 78

JUNIOR CLASS.

Benjamin Haywood Adams,	Elizabeth, N. J.,	3 N R H
Walter Akerman,	Cartersville, Ga.,	24 N E H
Henry Martyn Alexander, Jr.,	New York City,	6 S E
Knowlton Lyman Ames,	Chicago, Ill.,	8 U H
Frank Seitz Anthony,	Springfield, O.,	13 S W
Alfred Stubbs Baker,	Princeton, N. J.,	Trinity Rectory
James McClure Barnett,	New Bloomfield, Pa.,	Mr. Dohm's
Edgworth Bird Baxter,	Sparta, Ga.,	Mrs. Lavake's
George Greene Belt,	Cedar Rapids, Iowa,	9 N R S
Charles Goodwin Bickham,	Dayton, O.,	16 N W
George Hooper Bigelow,	San Francisco, Cal.,	40 N E H
John Warren Bird,	Trenton, N. J.,	9 N W H
Clinton Ledyard Blair,	Belvidere, N. J.,	16 E W H
Ernest Ludlow Bogart,	Yonkers, N. Y.,	F, U H
John Bright,	Pottsville, Pa.,	34 S E H
Thomas Brown, Jr.,	Princeton, N. J.,	Mr. Brown's
John Calvin Bucher,	Dillsburg, Pa.,	14 S M R H
Edward Phillips Burgess, Jr.,	Dedham, Mass.,	6 N W
Campbell Sheldon Carothers,	Greason, Pa.,	26 N E H

Dan Dillon Casement,	Painesville, O.,	11 W W H
Tileston Fracker Chambers,	Washington, D. C.,	18 U H
Henry Judson Chapin, Jr.,	New York City,	4 N R H
James Jeffries Charlton,	Albany, Oreg.,	Ivy Club
Albert Ward Cobb,	Sing Sing, N. Y.,	10 W M W H
Addison Berg Collins,	Philadelphia,	24 S E H
Arthur James Collins,	Sheridan, N. Y.,	19 S M R H
William Shubael Conant,	Princeton, N. J.,	14 S W
John Paul Conduit,	Nutley, N. J.,	23 N E H
George Bishop Covington,	Snow Hill, Md.,	Mrs. Warren's
Henry Kreider Denlinger,	Gordonville, Pa.,	26 N
Walter Charles Dohm,	Princeton, N. J.,	Mr. Dohm's
George Curtis Doolittle,	Toledo, O.,	1 N E H
David Linn Edsall,	Hamburg, N. J.,	2 E M W H
William Bradford Ewing,	Alexandria, Egypt,	18 S M R H
James Edward Farnam,	Media, Pa.,	9 W W H
James McCullough Farr, Jr.,	New York City,	7 S E
Stephen Church Flinn,	Albany, Oreg.,	13 N
William Sanderson Furst,	Bellefonte, Pa.,	6 W M W H
George McFarlane Galt,	Aurora, Ill.,	28 N E H
Herbert Mortimer Gesner,	Linden, N. J.,	5 N M R H
William Dwight Gibby,	Princeton, N. J.,	Mrs. Gibby's
Malcolm Graham, Jr.,	New York City,	10 W W H
Craig Reasoner Guerin,	Morristown, N. J.,	4 E M W H
Alexander Smith Guffey,	Greensburg, Pa.,	17 and 20 S E H
Harry Walter Haring,	Philadelphia,	22 S E H
Harlie Wallace Hathaway,	Jersey City, N. J.,	Mrs. Priest's
George Edward Hersh,	York, Pa.,	14 W W H
Walter Briggs Hill,	East Liverpool, O.,	8 and 10 N E H
Jacob Benner Hillegass,	Pennsburg, Pa.,	2 N R H
Jesse Watson Hirst,	Fall River, Mass.,	18 N E H
Charles Hodge,	Wilkes-Barre, Pa.,	7 S R H
Richard Irvin, Jr.,	New York City,	14 S E
Charles Huntington Jackson,	Newark, N. J.,	11 N W
Hugh Hartshorne Janeway,	New Brunswick, N. J.,	1 E W H
Alfred Thompson Kelly,	East Liverpool, O.,	8 and 10 N E H
Joseph Reynolds Kerr, Jr.,	New York City,	10 E W H
Winfield Smith Kimball,	Eatontown, N. J.,	15 N E

David Chambers Lewis,	Portland, Oreg.,	7 N E
Joseph William Lewis, Jr.,	St. Louis, Mo.,	35 and 36 U H
Albert Elmer Linder,	Orwigsburg, Pa.,	2 N R H
Louis Eugene Livingood,	Reading, Pa.,	4 S R H
Frank Hallett Lovell, Jr.,	Brooklyn, N. Y.,	46 U H
Walter Lowrie,	Philadelphia,	14 S W
Frank Lukens,	Elizabeth, N. J.,	8 S R H
William Harvey Lytle,	Princeton, N. J.,	Dr. Lytle's
Henry Alexander McConkey,	Peach Bottom, Pa.,	9 N R H
Robert Thompson McCready,	Sewickley, Pa.,	29 N E H
Mark Lindsey McDonald, Jr.,	Santa Rosa, Cal.,	19 E W H
Andrew Hartupee McKee,	Allegheny, Pa.,	3 and 4 U H
Malcolm McLaren,	Brooklyn, N. Y.,	28 S E H
James Mathers,	Mifflintown, Pa.,	E, U H
Huntington Wolcott Merchant,	Astoria, N. Y.,	10 N M R H
Dunlop Moore, Jr.,	N. Brighton, Pa.,	Mr. Burroughs'
Vandeveer Van Arsdale Nicholas,	Somerville, N. J.,	15 N E H
Edwin Nicodemus,	Boonsboro', Md.,	B, U H
Newton Fassett Osmer,	Franklin, Pa.,	12 N M R H
Francis Palmer,	Kennebunkport, Me.,	6 W M W H
Howard Winters Perrin,	Luzerne, Pa.,	5 N W
William Lee Phelps,	Springfield, O.,	7 S W
Delavan Leonard Pierson,	Philadelphia,	18 S E H
Eugene Blackburn Price,	Cincinnati, O.,	6 E W H
William Cowper Prime,	Yonkers, N. Y.,	15 S E
John H. Race,	Kingston, Pa.,	Mrs. Priest's
Edmund Grindall Rawson, Jr.,	Albany, N. Y.,	1 N M R H
Albert Reid,	Englishtown, N. J.,	12 N E H
William Mapes Rysdyk,	Goshen, N. Y.,	22 N E H
James Madison Sharon,	McAlisterville, Pa.,	18 S W
George Louis Shearer,	San Francisco, Cal.,	27 N
Spencer Howell Shepard,	New York City,	3 W M W H
Robert Porter Shick,	Reading, Pa.,	12 S E
Reginald Kearney Shober,	Philadelphia,	14 N E
Arthur Melville Shrady,	New York City,	11 S W
Edwin Withers Shultz,	Kirkwood, Pa.,	19 S M R H
Lowry Witherspoon Sibbet,	Shippensburg, Pa.,	10 N
Louis Dean Speir,	South Orange, N. J.,	5 N W

Charles George Sproull,	Jacksonville, Fla.,	3 S E H
Morris Crater Sutphen,	Morristown, N. J.,	21 N E H
Joseph Holden Sutton,	New York City,	18 N W
Joseph Notley Thomas,	Santa Rosa, Cal.,	19 E W H
Robert T. Townsend,	New Brighton, Pa.,	11 S E
J. Spencer Van Cleve,	Erie, Pa.,	10 S W
James Ditmars Voorhees,	Morristown, N. J.,	1 E M W H
Frederick Morton Wall,	New York City,	4 S E H
Frederick John Watson,	Cairo, Egypt,	5 N E H
Grant Weidman, Jr.,	Lebanon, Pa.,	15 N W
George Silas West,	Waverly, N. Y.,	16 S E H
Clarke Benedict Williams,	Corning, N. Y.,	Mrs. Appleget's
Charles Albert Woods,	Sewickley, Pa.,	1 U H
Howard Wright,	Princeton, N. J.,	Mr. J. Wright's
John Hankins Wright,	Princeton, N. J.,	Mr. T. Wright's
John Morris Yeakle,	Norristown, Pa.,	8 S M R H
Stuart Robinson Young,	Louisville, Ky.,	1 S R H

JUNIORS 112

SOPHOMORE CLASS.

John Franklin Adams,	Mount Union, Pa.,	34 N E H
Louis Bartholomew Adams,	New York City,	38 S E H
Cornelius Rea Agnew, Jr.,	New York City,	8 E M W H
George Bliss Agnew,	New York City,	8 E M W H
Arthur Sterling Auchincloss,	Orange, N. J.,	4 W M W H
Wilson Aull,	St. Louis, Mo.,	17 S E
Samuel Harbourne Baldwin,	Newark, N. J.,	9 S E
George Orris Bechtel,	Colora, Md.,	Mrs. E. M. Allen's
George Jeffery Bergen,	Camden, N. J.,	5 S R H
Jeremiah Sullivan Black,	York, Pa.,	20 S E
William Bayard Blackwell,	Trenton, N. J.,	1 W M W H
Paul Russell Bonner,	New York City,	6 W W H
Curtis Orris Bosserman,	Newport, Pa.,	8 S E H
Willard Hall Bradford,	Dover, Del.,	Mrs. King's
William Christy Bryan,	St. Louis, Mo.,	9 W M W H

Paul Van Ettan Cary,	Milwaukee, Wis.,	17 W W H
Willie Winfield Casselberry,	Pottstown, Pa.,	7 N R H
Lowrie Childs,	Omaha, Neb.,	38 U H
Theodore Winthrop Church,	Hudson, N. Y.,	20 S E
Christopher Walter Collier,	Warwick, Mass..	Mrs. Zanes'
Ernest Bonner Cooper,	Shelbyville, Tenn.,	9 U H
Harry Franklin Covington,	Snow Hill, Md.,	Mrs. Warren's
Charles Carroll Dana,	Morrisville, N. Y.,	41 and 42 U H
Herman Stearns Davis,	Milford, Del.,	13 S E
William Leek Davison,	Brooklyn, N. Y.,	9 N E H
William Russell Deemer,	Williamsport, Pa.,	6 N R H
Claire H. Denman,	Scottsville, N. Y.,	Mrs. McCarthy's
Alfred Pearce Dennis,	Pocomoke City, Md.,	20 N E H
Chester Valentine Dolph,	Portland, Oreg.,	Mrs. Cochrane's
George Dugan,	Philadelphia,	4 S M R H
James Henry Dunham,	Trenton, N. J.,	6 S R H
Harry Lippie Durell,	Woodstown, N. J.,	17 N E
Samuel Russell Dye,	Trenton, N. J.,	13 N E
Edward Waterman Evans, Jr.,	Trenton, N. J.,	6 S R H
William Littell Everitt,	Jamesburg, N. J.,	39 S E H
Clarence McCheyne Gordon,	Fannetsburg, Pa.,	9 S E H
Henry Woodhull Green,	Trenton, N. J.,	Mrs. Lavake's
Joseph Webb Harper,	Still Pond, Md.,	16 S E
William Henry Hensel,	Philadelphia,	33 S E H
William Post Herrick,	New York City,	7 E M W H
Erskine Hewitt,	New York City,	75 and 76 U H
John Hone, 3d.,	Red Bank, N. J.,	13 N E
John Preston Hoskins,	Media, Pa.,	Mrs. Ferguson's
Charles Fish Howell,	New Brunswick, N. J.,	25 N E H
Rowland Herbert Jackson,	Ohio, Mo.,	Mrs. M. A. Warren's
Charles Marion Jamison,	Greensburg, Pa.,	8 N M R H
David Stuart Dodge Jessup,	Beirut, Syria,	19 N W
Benjamin Franklin Jones, Jr.,	Allegheny, Pa.,	11 E W H
Pringle Carlisle Jones,	South Charleston, O.,	4 E M W H
Phineas Barbour Kennedy,	Bridgeton, N. J.,	16 S M R H
John Carruthers Leach,	Philadelphia,	Mrs. Warren's
Edwin Augustus Stevens Lewis,	Hoboken, N. J.,	5 W M W H
Richard Bruff Lyon,	Morristown, N. J.,	5 E W H

Donald McColl,	Caledonia, N. Y.,	Mrs. McCarthy's
Glenn Ford McKinney,	Titusville, Pa.,	6 N R H
George Stewart McLean,	Shippensburg, Pa.,	9 N M R H
Charles Hodge MacMillan,	Perrineville, N. J.,	15 N M R H
Thomas Ferguson McNair,	Hazleton, Pa.,	41 N E H
Hugh McNinch,	Grovania, Pa.,	32 N E H
James Alexander Matheson,	Philadelphia,	2 S E H
James Cowden Meyers,	Columbia, Pa.,	7 N R H
Homer Ramsdell Miller,	Amity, N. Y.,	2 S M R H
Mushegh Minas Minassian,	Constantinople, Turkey,	4 S M R H
Franklin Thomas Moore,	Bridgeton, N. J.,	16 S M R H
John Cameron Motter,	New Buffalo, Pa.,	18 S W
Archibald Gordon Murray,	New York City,	5 W W H
Samuel Grant Oliphant,	Woodstown, N. J.,	Mrs. Waibel's
Otho Alvin Ormond,	Elderton, Pa.,	2 S M R H
Franklyn Paddock,	New York City,	7 W W H
Henry Page, Jr.,	Princess Anne, Md.,	20 N E
George Jacobs Parker,	Mifflintown, Pa.,	E, U H
William McCready Parker,	Oil City, Pa.,	14 S E H
George Stevenson Patton,	Princeton, N. J.,	Pres. Patton's
Harmar Denny Paxton,	Princeton, N. J.,	2 E W H
Frank Hervey Payne,	Titusville, Pa.,	41 and 42 U H
Nelson Lane Petty,	Trenton, N. J.,	1 W M W H
Edgar Allan Poe,	Baltimore, Md.,	5 W M W H
Daniel Warren Poor, Jr.,	Philadelphia,	42 N E H
Benedict Lincoln Prieth,	Newark, N. J.,	9 S E
Edward Ross Proctor,	Germantown, Pa.,	Mr. Thomas'
Frank Webster Propst,	Albany, Oreg.,	13 N
Alfred Charles Post Quimby,	Jersey City, N. J.,	Mrs. Thomas'
Charles Elbert Rhodes,	So. Schodack, N. Y.,	14 N M R H
William Richards Ridington,	Lansdale, Pa.,	39 N E H
Michael Francis Riley,	Morristown, N. J.,	Mrs. Wolfe's
Robert Swan Robertson,	Cortland, N. Y.,	12 S M R H
Joseph Haswell Robinson,	New York City,	Mrs. W. W. Smith's
Thomas Hastings Robinson, Jr.,	Allegheny, Pa.,	19 S E
Joseph Stockton Roddy,	New Bloomfield, Pa.,	8 S E
Samuel Semple,	Philadelphia,	40 U H
Charles Arthur Sidler,	Danville, Pa.,	35 N E H

George Howell Shields, Jr.,	St. Louis, Mo.,	63 U H
William Cornman Spicer,	Harrisburg, Pa.,	1 S E H
Arthur Willing Spruance,	Wilmington, Del.,	17 W W H
George Herbert Stephens,	Montrose, Pa.,	Mrs. Ferguson's
James Weaver Sterry,	New York City,	14 E W H
Charles Smith Stevens,	Cape May City, N. J.,	Mrs. Zanes'
Robert Stuart Stewart,	Detroit, Mich.,	44 and 45 U H
Robert Boorman Strong,	New Brunswick, N. J.,	2 W W H
Ambrose White Vernon,	Morristown, N. J.,	79 U H
Harwood Vernon,	Summit, N. J.,	79 U H
George Riddle Wallace,	Sewickley, Pa.,	38 N E H
Robert Benson Wallace,	Harrisburg, Pa.,	44 and 45 U H
James Hitchcock Wardwell,	South Orange, N. J.,	13 S W
Samuel Wasson,	Philadelphia,	2 N E
George Post Wheeler,	Philadelphia,	9 S M R H
Charles Dunning White,	Summit, N. J.,	10 N E
William Silas Whitehead,	Newark, N. J.,	19 S W
Alan Dickson Wilson,	Philadelphia,	15 S W
Lawrence Crane Woods,	Sewickley, Pa.,	1 U H
Alfred Beaver Yeomans,	Orange, N. J.,	19 N E H

SOPHOMORES 111

FRESHMAN CLASS.

James Purviance Atkinson,	Elizabeth, N. J.,	Mrs. Patterson's
Frederick Randolph Bailey,	Elizabeth, N. J.,	Mrs. Patterson's
Thomas Barclay,	Greensburg, Pa.,	8 N M R H
Imlay Benet,	Brooklyn, N. Y.,	73 U H
Robinson Potter Dunn Bennett,	Garden City, L. I.,	Miss S. E. Leigh's
Martin Voorhees Bergen, Jr.,	Camden, N. J.,	5 S R H
John William Rufus Besson,	Hoboken, N. J.,	Mrs. Cochrane's
Leonidas Huston Besson,	Hoboken, N. J.,	Mrs. Cochrane's
Frederick Gregory Betts,	Clearfield, Pa.,	11 U H
George Whitefield Betts,	Englewood, N. J.,	T, U H
†Harry Elmer Bierly,	Rebersburg, Pa.,	3 S E

† Entrance examinations not complete.

Cassius Edwin Bixler,	Eshcol, Pa.,	Mr. W. H. Hubbard's
†Louis Gerard Borgmeyer,	Rahway, N. J.,	2 S W
William Little Bradley,	Middletown, N. Y.,	Mrs. Zanes'
John Menifee Brennan,	Paris, Ky.,	Mr. Van Dyke's
Charles Wesley Brenniser,	Philadelphia,	Mrs. Warren's
James Chester Brewster,	Chester, N. J.,	4 N E H
William Sanderson Brown,	New York City,	Mrs. Goldie's
Frederick C. Bucher,	Columbia, Pa.,	69 U H
George William Burleigh,	Great Falls, N. H.,	13 U H
Courtlandt Patterson Butler,	Blairstown, N. J.,	Rev. Mr. Hinsdale's
Duncan Campbell,	Caledonia, N. J.,	Mrs. McCarty's
Herbert Swift Carter,	Orange Valley, N. J.,	8 W M W H
Marshall Andrews Christy,	Sewickley, Pa.,	2 U H
Alonzo Church,	Washington, D. C.,	69 U H
Varnum Lansing Collins,	London, Eng.,	Mrs. Patterson's
Leon Martin Conwell,	Philadelphia,	Mrs. Stonaker's
Pierre Frederick Cook,	Waterloo, N. J.,	Mrs. Wolfe's
Richard Coulter, Jr.,	Greensburg, Pa.,	17 and 20 S E H
Frank Linley Critchlow,	Mt. Hermon, Mass.,	Mrs. Stonaker's
James Lucas DeLong,	Lexington, Ky.,	5 S E
Robert Denniston,	Washingtonville, N. Y.,	Mrs. Carpenter's
Edward Dickinson Duffield,	Princeton, N. J.,	Prof. Duffield's
Harry Slawson Dunning,	Middletown, N. Y.,	Mrs. Zanes'
Smith Gardner Dunning,	Mechanicstown, N. Y.,	Mrs. Zanes'
Albert Frost Earnshaw,	Lowville, N. Y.,	Mrs. Hubbard's
John William Easton,	Princeton, N. J.,	Mr. Easton's
Elvin Randolph Edmundson,	Pittsburg, Pa.,	64 and 65 U H
Albert Zabriskie English,	Hightstown, N. J.,	Mrs. Waibel's
†Alfred Evans,	Philadelphia,	12 N M R H
Marcus Stults Farr,	Cranbury, N. J.,	17 N E H
Max Farrand,	Newark, N. J.,	26 S E H
Harry Kerr Freeman,	Huntingdon, Pa.,	42 S E H
†Herbert Gibby,	Princeton, N. J.,	Mrs. Gibby's
William Mudge Graham,	Montgomery, Ala.,	8 N E
Ralph Laurie Erskine Graham,	Philadelphia,	36 S E H
Edward Graver,	Hulton, Pa.,	Mrs. Cochrane's
Andrew Caldwell Gray,	Wilmington, Del.,	Mrs. Goldie's
LeRoy Gresham,	Baltimore, Md.,	Mrs. Lavake's

Henry Ewing Hale, Jr., Princeton, N. J., Mrs. Chamberlain's
Frank Hillman Hall, Washington, D. C., Mrs. Thomas'
Howland Hanson, Key East, N. J., 12 N E H
William Harris, Jr., Princeton, N. J., Mrs. Harris'
Charles Delucena Hart, Philadelphia, 60 U H
Hayward Augustus Harvey, Jr., Orange, N. J., 12 U H
Henry Clay Havens, Burrsville, N. J., Mr. Hubbard's
Caspar Wistar Hodge, Jr., Princeton, N. J., Dr. Hodge's
James Frederic Hosford, Kinderhook, N. Y., 67 U H
Leavitt Howe, Jr., Princeton, N. J., Arnheiter's Building
Robert Pollock Howie, Westfield, Mass., 37 N E H
Samuel Craig Huston, Philadelphia, 2 N E
Frank Martin Hutchinson, Sewickley, Pa., 2 U H
William Beckford Irish, New Castle, Pa., Mrs. F. A. Dohm's
Thomas Smith Irvin, New York City, 14 S E
James Peter King, Galt, Ontario, 1 N E
John Benem Kouwenhoven, Flatbush, L. I., 4 W W H
Finley Hall Lloyd, Pittsburgh, Pa., Hankins Building
Lorenzo Grenville Lyon, Summit, N. J., 4 N E
Irvine McColl, Caledonia, N. Y., Mrs. McCarty's
John Robinson McCune, Pittsburgh, Pa., Hankins Building
†Harry Fleming McDowell, Connellsville, Pa., Mrs. H. M. Wright's
Alan Cassilis McIlvaine, Vincennes, Ind., 66 U H
Austin McLanahan, Chambersburg, Pa., P, U H
Clarence Arthur McWilliams, Brooklyn, N. Y., 4 W W H
John Maclean Magie, Paterson, N. J., Mr. Brown's
Albertus McLaren Marshall, Dayton, O., Miss Leigh's
John Mills Mayhew, Beatrice, Neb., Mr. Jacob Leigh's
Russell King Miller, Philadelphia, 39 U H
Frank Montgomery Milligan, Newport, Pa., 66 U H
Theodore Wilson Morris, Freehold, N. J., 34 U H
Charles Ogden Mudge, Princeton, N. J., Dr. Mudge's
William Leroy Mudge, Princeton, N. J., Dr. Mudge's
William Belfrage Parsons, Franklin, N. Y., 1 S E
George Wilson Peddie, Philadelphia, Mrs. Warren's
John Chester Backus Pendleton, Berkeley Springs, W. Va., Mrs. Carpenter's
Warington Walworth Periam, Newark, N. J., 64 and 65 U H

Bowder Phinizy,	Augusta, Ga.,	Mrs. Margerum's
William Kelly Prentice,	New York City,	1 S W
John Luther Rankin,	Newark, N. J.,	36 S E
Charles Ellet Rieman,	Baltimore, Md.,	62 U H
Alfred Randolph Riggs,	Baltimore, Md.,	7 W M W H
Jesse Bright Riggs,	Baltimore, Md.,	7 W M W H
Michael Francis Riley,	Morristown, N. J.,	Mrs. Wolfe's
John Sinclair Roberts, Jr.,	York, Pa.,	Mrs. Zanes'
Pierre Keller Satterfield,	Philadelphia,	3 S W
Charles Henry Shick,	Reading, Pa.,	12 S E
Ralph Duffield Small,	Boston, Mass.,	Mr. Van Dyke's
Uriah Franklin Smiley,	Philadelphia,	Mrs. Stonaker's
†Charles Philip Spooner,	Hudson, Wis.,	Mrs. Zapf's
Robert Alston Stevenson,	Lewiston, Pa.,	40 U H
John William Stork,	Baltimore, Md.,	Mr. Van Dyke's
William Stump,	Bel Air, Md.,	S, U H
Joseph Gaston Symmes,	Cranbury, N. J.,	17 N E H
Francis Edgar Talcott,	New York City,	15 W W H
Charles Irvin Truby,	Duncannon, Pa.,	4 N W
Thomas Edward Van Ausdal,	Dayton, O.,	16 N W
John Van Ness,	Johnsonburg, N. J.,	Mr. Van Ness'
Peter Vredenburgh,	Freehold, N. J.,	Mr. A. G. Dohm's
Williamson Updike Vreeland,	Rocky Hill, N. J.,	Mrs. P. Vanderbilt's
Frederick Cliford Ward,	Croton, N. Y.,	1 N E
James Westervelt,	New Brighton, S. I.,	Mrs. Carpenter's
Benjamin Vrome White,	Summit, N. J.,	10 N E
Edward Van Dyke Wight,	New Hamburgh, N. Y.,	40 S E H
Jesse Lynch Williams,	Princeton, Ill.,	Mrs. Anderson's
John Glover Wilson,	Baltimore, Md.,	Mr. Van Dyke's
John Edgar Witherspoon,	Chambersburg, Pa.,	10 N
Clinton Tyler Wood,	Fargo, Dak.,	Mrs. Van Noy's
†Richard Flavel Woods,	Philadelphia,	7 E W H
Walter Livingston Wright, Jr.,	Imlaystown, N. J.,	2 N E H
Alexander Oliver Young,	Newton, N. J.,	Mrs. S. E. Anderson's
Lawrence Andrew Young,	Louisville, Ky.,	15 N E

FRESHMEN, ... 121

SPECIAL STUDENTS.

NOT CANDIDATES FOR A DEGREE.

Campbell Elias Babcock,	Chicago, Ill.,	81 S E
Jeremiah Milton Bamford,	Fairton, N. J.,	87 N E H
Harry Mills Barkley,	Montclair, N. J.,	14 S W
James Sutton Blair,	Indiana, Pa.,	Mrs. Thomas'
Alexander Nixon Bodine,	Philadelphia,	13 E W H
Edward Landseer Boyle,	Memphis, Tenn.,	I, U H
Frederic Brokaw,	New York City,	33 U H
John Ralph Burt,	Detroit, Mich.,	1 S R H
Daniel Ivins Camp,	Hightstown, N. J.,	16 N
William Judson Cook,	Sheridan, N. Y.,	8 N W
William Frederick Dix,	Newark, N. J.,	5 E M W H
Joseph Miller Huston,	Philadelphia,	2 N E
Henry Arthur Inman,	Atlanta, Ga.,	G, U H
John Walter Inman,	Atlanta, Ga.,	K, U H
Chujiro Kochi,	Fox Chase, Pa.,	Mrs. Killoran's
Levon H. Marashlian,	Caesarea, Asia Minor,	Mrs. Zanes'
Henry Lee Mason, Jr.,	Pittsburgh, Pa.,	Mr. Jos. Priest's
John Kearsley Mitchell,	Philadelphia,	60 U H
Edwin Janney Moles,	Minneapolis, Minn.,	Mrs. Dohm's
Isaac Nakagawa,	Tokio, Japan,	41 S E H
Charles Pope O'Fallon,	St. Louis, Mo.,	35 and 36 U H
Robert Dudley Osburn,	Sewickley, Pa.,	75 and 76 U H
Thomas Robins, Jr.,	Morristown, N. J.,	17 S W
Harry Porter Robinson,	New York City,	8 N R H
John William Sanders,	Atlanta, Ga.,	K, U H
Thomas Leeper Kane Shields,	Princeton, N. J.,	13 S E H
Isaac Butler Smith,	Cedar Rapids, Iowa,	9 N E H
Dudley Almonte Smith,	Creston, O.,	Mrs. Easton's
Frank Berkeley Smith,	New York City,	Mr. Priest's
Robert Brinkley Snowden,	Memphis, Tenn.,	G, U H
Charles Wood Somerby,	Philadelphia,	O, U H
Mathew Charles Spellmeyer,	Hoboken, N. J.,	Mrs. Van Noy's
Orville Comstock Taintor,	S. Orange, N. J.,	7 S M R H
William McIlwain Thompson,	St. Paul, Minn.,	Mrs. Dohm's

James Ruggles Thorpe,	Minneapolis, Minn.,	9 E M W H
Samuel Skidmore Thorpe,	Minneapolis, Minn.,	9 E M W H
John Tredinnick,	New York City,	4 S E
John Worthington Valliant,	St. Louis, Mo.,	5 U H
Alfred Janvier Wagner,	Minneapolis, Minn.,	S R, U H
Thomas White,	Indiana, Pa.,	7 N W
John Alexander Yorke,	Brooklyn, N. Y.,	4 S E

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UNDERGRADUATES IN THE JOHN C. GREEN SCHOOL OF SCIENCE.

SENIOR CLASS.

I. Candidates for B. S. II. Candidates for C. E.

II.	Jason Rogers Barr,	Louisville, Ky.,	9 S W
II.	William Roscoe Bonsal,	Baltimore, Md.,	18 W W H
II.	William Daniel Bratton,	Elkton, Md.,	H, U H
I.	Byron S. Clarke,	Brooklyn, N. Y.,	2 W M W H
I.	A. Edward Conover, Jr.,	New York City,	20 S W
I.	George Kerr Edwards,	Washington, D. C.,	18 E W H
I.	Theodore Granger Gordon,	Columbus, O.,	L, U H
II.	George Louis Hall,	Bedford, Pa.,	L, U H
I.	Thomas W. Hotchkiss, Jr.,	Elmira, N. Y.,	13 N E H
I.	Chas. Jenkins Montgomery,	Augusta, Ga.,	Mrs. Margerum's
II.	Jos. Chandler Morris, Jr.,	New Orleans, La.,	18 N E
I.	William Boswell Mount,	Philadelphia,	14 N E H
I.	Thomas Clarence Noyes,	Washington, D. C.,	12 S W
I.	†Henry Russell Pemberton,	Richmond, Va.,	Mrs. VanSyckle's
I.	Cyrus Long Pershing,	Pottsville, Pa.,	18 S E
I.	John Eliot Shrady,	New York City,	11 S W
II.	Lewis Mudge Smith,	Princeton, N. J.,	Mrs. Smith's

SENIORS, ... 17

JUNIOR CLASS.

I.	Edwin A. Dalton,	LeMars, Iowa,	9 N E
I.	William Vance Dinsmore,	Bloomington, Ill.,	27 and 30 N E H
II.	Wilbur Chapman Fisk,	New York City,	12 E W H
II.	George Goldie, Jr.,	Princeton, N. J.,	Mr. Goldie's
I.	Frederick Wm. Hagney,	Newark, N. J.,	29 S E H
II.	Albert O. Headley, Jr.,	Newark, N. J.,	6 E M W H

† Entrance examinations not complete.

I.	Bernard Shea Horne,	Pittsburgh, Pa.,	12 N W
I.	Albert Gould Jennings,	Brooklyn, N. Y.,	16 W W H
I.	Paul Foster Leach,	Philadelphia,	Mrs. Warren's
II.	Chas. Richard McMillan,	Princeton, N. J.,	Prof. McMillan's
II.	William Passmore Meeker,	Newark, N. J.,	11 S M R H
I.	Frank Seymour Miller,	Elmira, N. Y.,	16 N E
I.	Charles Howard Miner,	Wilkes-Barre, Pa.,	7 S R H
I.	Frank John Newbury,	Lima, N. Y.,	19 N E
II.	Harry Otis Nutting,	Lebanon, Pa.,	14 N W
II.	William Pitt Nutting,	Lebanon, Pa.,	5 N E
II.	Howard Crathorne Phillips,	New York City,	3 N E H
II.	Frederic Vernon Pitney,	Morristown, N.J.,	Dr. Macdonald's
II.	George Van Dusen Rickert,	Pottsville, Pa.,	13 N W
I.	Charles K. Rodgers,	Springfield, O.,	7 S W
II.	Robert Lincoln Scudder,	Princeton, N. J.,	Mr. Scudder's
II.	Edgar Maverick Smith,	New York City,	16 S W
I.	Samuel Wood Thurber,	Syracuse, N. Y.,	35 S E H
I.	William Campbell Trusdell,	Newark, N. J.,	8 W W H
I.	Frank Scott Willock,	Pittsburgh, Pa.,	A, U H

JUNIORS 25

SOPHOMORE CLASS.

II.	James Barnes,	New York City,	9 E W H
I.	Charles Jenney Chambers,	Philadelphia,	27 and 30 N E H
II.	Roscoe Henry Channing, Jr.,	Plainfield, N. J.,	20 E W H
I.	Joseph Walter Cooper,	Camden, N. J.,	D, U H
I.	Radclyffe Furness,	Philadelphia,	70 and 71 U H
II.	Arthur Buckingham Gladwin,	Leonia, N. J.,	6 W W H
I.	Edwin Bates Harts,	Springfield, Ill.,	Mrs. Burroughs'
II.	William Lapidge Hedenberg,	Newark, N. J.,	49 and 50 U H
I.	Russell Lee Jones,	Farmington, Conn.,	70 and 71 U H
II.	Curtis Edward Knickerbocker,	Morrisville, N. Y.,	N, U H
I.	Charles Thomas Mixer,	Chicago, Ill.,	Prof. Young's
II.	Theodore Pesinger Payne,	Sayville, N. Y.,	11 N
I.	John Hutchings Sealy,	Galveston, Tex.,	Mrs. Easton's
II.	Robert Anderson Watts,	Louisville, Ky.,	N, U H
II.	Charles Edgar Zortman,	Lancaster, Pa.,	11 N M R H

SOPHOMORES, ... 15

FRESHMAN CLASS.

II.	John Howard Adams,	Brooklyn, N. Y.,	8 W M W H
I.	† Walter Monteith Aikman, Jr.,	Brooklyn, N. Y.,	Mrs. Priest's
I.	Benjamin Ames,	Washington, D. C.,	19 U H
II.	Robert Dickson Ballantine,	Newark, N. J.,	14 Nassau Hotel
II.	† Chester Bayles,	New York City,	Mr. Van Dyke's
I.	Howard D. Betts,	Englewood, N. J.,	T, U H
II.	† William Jewell Blackwell,	Trenton, N. J.,	10 U H
II.	Arthur Wellman Butler,	Yonkers, N. Y.,	72 U H
II.	† Orville Platt Curran, Jr.,	Chicago, Ill.,	Mrs. G. Goldie's
I.	George Kidder Davis,	Wilkes Barre, Pa.,	U, U H
II.	Arthur LeGrand Doty,	Orange, N. J.,	1 N W
I.	George Thomas Dunlop, Jr.,	Washington, D. C.,	Mrs. Easton's
I.	Edward D. Ellison,	Kansas City, Mo.,	Mr. Van Dyke's
II.	William Elmer, Jr.,	Trenton, N. J.,	Mrs. Thomas'
I.	Evan Morton Evans,	Englewood, N. J.,	M, U H
II.	Robert Field,	Fort Adams, R. I.,	74 U H
I.	John Young Graham,	Roberts, Wis.,	V, U H
II.	Charles Van Dyke Gulick,	Princeton, N. J.,	V. B. Gulick's
I.	† John Hunter Hanna,	Henderson, Ky.,	Mrs. Zapf's
I.	Sheppard Homans, Jr.,	Englewood, N. J.,	31 U H
II.	Curtis Grubb Hussey,	Allegheny, Pa.,	Mrs. Dohm's
II.	William Vail Johnson,	Orange, N. J.,	1 N W
I.	Thomas Benjamin Kennedy, Jr.,	Chambersburg, Pa.,	P, U H
II.	Alexander Spinning Lilley,	Columbus, O.,	32 and 33 U H
II.	Charles Albert McKenney,	Washington, D. C.,	Mrs. Wolfe's
I.	Arthur Mandeville Minot,	East Orange, N. J.,	80 U H
I.	Frederick John Moses,	Trenton, N. J.,	3 S R H
I.	Max Munger,	Plainfield, N. J.,	Mrs. Burroughs'
II.	James Porter Parker,	New Orleans, La.,	23 S E H
II.	† William Edward Pearson,	Orange Heights, N. J.,	77 U H
I.	William Floyd Sicard,	Washington, D. C.,	8 N R H
I.	Frank William Smith, Jr.,	Philadelphia,	48 U H
II.	† Charles Wood Tindle,	Pittsburgh, Pa.,	61 U H
I.	Winfield Price Sully,	New York City,	20 E W
I.	‡ William Hopkins Witt,	Henderson, Ky.,	Mrs. Zapf's

FRESHMEN, ... 35

† Deficient on entrance examination.
‡ On trial.

SPECIAL STUDENTS.

NOT CANDIDATES FOR A DEGREE.

II.	Andrew Jackson Allen,	Blairstown, N. J.,	27 S E H
II.	Paul Clark Aylesworth,	Council Bluffs, Ia.,	U, U H
II.	Arthur Denton Ball,	Newark, N. J.,	6 E M W H
I.	Arthur Grant Brown,	Woodbridge, N. J.,	Mrs. McCarty's
II.	Frederic Hutchinson Cubberley,	Trenton, N. J.,	Trenton
I.	Halsey Durand,	Newark, N. J.,	9 E W H
I.	Clarence Edward Lemassena,	Newark, N. J.,	1 W W H
II.	Gilbert N. McMillan,	Detroit, Mich.,	6 and 7 U H
I.	Ben Luker Morgan,	Freedom, Pa.,	37 S E H
II.	Arthur Gardner Moses,	Trenton, N. J.,	3 S R H
II.	Lewis Dexter Mowry,	Englewood, N. J.,	Mr. A. G. Dohm's
I.	Henry Dorr Sill,	Cooperstown, N. Y.,	Mrs. Patterson's
II.	James Ross Todd,	Louisville, Ky.,	C, U H
II.	George Trotter,	New York City,	8 E W H
II.	Charles F. Uebelacker,	Morristown, N. J.,	1 E M W H
II.	Orville Griffith Waring,	Plainfield, N. J.,	2 E M W H
I.	Samuel Hines Wigton,	Altoona, Pa.,	Mrs. Hubbard's
II.	George Shreve Wilkins,	Mount Holly, N. J.,	3 N M R H
I.	John Zimmerman,	New Glarus, Wis.,	17 S M R H

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CLASSIFICATION OF UNDERGRADUATES BY RESIDENCE.

New Jersey	161	Nebraska	2
Pennsylvania	149	Alabama	1
New York	105	Connecticut	1
Ohio	20	Dakota	1
Maryland	18	Florida	1
District of Columbia	12	Maine	1
Kentucky	10	New Hampshire	1
Missouri	10	Rhode Island	1
Illinois	9	South Carolina	1
Minnesota	8	Texas	1
Georgia	7	Vermont	1
Massachusetts	6	Virginia	1
Iowa	5	West Virginia	1
Oregon	5		
California	4	Egypt	2
Delaware	4	India	2
Wisconsin	4	Japan	2
Michigan	3	Asia Minor	1
Tennessee	3	Canada	1
Indiana	2	England	1
Kansas	2	Syria	1
Louisiana	2	Turkey	1

ABBREVIATIONS.

N, Nassau Hall.
N E, North Entry of East College.
S E, South Entry of East College.
N W, North Entry of West College.
S W, South Entry of West College.
N R H, North Entry of Reunion Hall.
S R H, South Entry of Reunion Hall.
N M R H, North Middle Entry of Reunion Hall.
S M R H, South Middle Entry of Reunion Hall.
E W H, East Entry of Witherspoon Hall.
W W H, West Entry of Witherspoon Hall.
E M W H, East Middle Entry of Witherspoon Hall.
W M W H, West Middle Entry of Witherspoon Hall.
N E H, North Entry of Edwards Hall.
S E H, South Entry of Edwards Hall.
U H, University Hall.
S R, U H, Smoking Room University Hall.

HONORS AND DEGREES CONFERRED.

DEGREES.

Honorary Degrees Conferred June, 1888.

LL.D. —Sir Daniel Wilson, LL. D., F. R. S. E., President of the University of Toronto, Canada.

Timothy Dwight, D.D., LL.D., President of Yale University, Connecticut.

William Pepper, M. D., LL.D., Provost of University of Pennsylvania.

Thomas S. Hastings, D.D., President of Union Theological Seminary, New York.

Edward H. Griffin, D. D., Professor in Williams College, Massachusetts.

Hon. Henry H. Sibley, President of Board of Regents of University of Minnesota, Minnesota.

D.D. —Rev. James S. Riggs, Professor in Auburn Theological Seminary, New York.

Rev. Andreas C. Zenos, Professor in Hartford Theological Seminary, Connecticut.

Degrees in Course Conferred November, 1887.

Bachelors of Arts	2
Masters of Arts	4

Degrees in Course Conferred February, 1888.

Bachelor of Arts	1
Masters of Arts	5

Degrees in Course Conferred at a Special Meeting, March 1, 1888.

Bachelor of Science	1
Master of Arts	1

Degrees in Course Conferred June, 1888.

Ph.D.—Charles Albert Jaggar, A.B., Class of 1886.
Thesis—The Value of Realism as a Philosophy.

Masters of Arts	47
Masters of Arts on examination	24
Masters of Science on examination	1
Bachelors of Arts	91
Bachelors of Science	5
Civil Engineers	3

HONORS—1887-88.

COMMENCEMENT HONORS.

MASTER'S ORATION.

William B. McIlvaine, Illinois.

SENIOR HONORMEN.

FIRST GROUP—*Magna cum laude.*

Winthrop More Daniels,	*Valedictory.*
Hugh Trowbridge Dobbins,	*Latin Salutatory.*
Edwin Mortimer Hopkins,	*English Salutatory.*

SECOND GROUP—*Cum laude.*

With special excellence in particular departments indicated.

Ernest Trow Carter,	*Philosophy.*
Russell Carter,	*General Excellence.*
Frederick L. Drummond,	*Political Science.*
William Holmes Forsyth,	*Modern Languages.*
William Fryling,	*Philosophy.*
Kemper Fullerton,	*Classics.*

William Hallock Johnson,	*Mental Science.*
William Jay Knox.	
Thomas Marc Parrott,	*English Literature.*
Peter Rioseco,	*General Excellence.*
William Henry Runyon,	*Physical Science.*
Charles Sidney Smith,	*Classics.*
William Wisner White,	*General Excellence.*

Livingston Farrand, Samuel Colgate Hodge, William Mann Irvine, Robert Winters McGregor, Ralph Earl Prime, Jr., Evans Tulane Richardson, George B. Westcott Van Dyke, Frank Allan Waterman, and Walter Augustus Wyckoff, of the Third Group, also received Commencement orations.

FELLOWS.

(For names of Fellows see page 16.)

SENIOR PRIZEMEN.

ALEXANDER GUTHRIE McCOSH PRIZE.

Roger Bruce Cash Johnson, West Indies.

CLASS OF 1859 PRIZE IN ENGLISH LITERATURE.

Thomas Marc Parrott, Ohio, with honorable mention of Peter Rioseco, Pennsylvania.

THE GEORGE POTTS BIBLE PRIZES.

Robert Hutchinson Kirk, Pennsylvania.
Charles Alvin Smith, Pennsylvania.

THE LYMAN H. ATWATER PRIZE IN POLITICAL SCIENCE.

Ralph Earl Prime, Jr., New York.

LYNDE PRIZE DEBATE.

Winthrop More Daniels, Ohio, *First Prize.*
Frederick L. Drummond, New Jersey, *Second Prize.*
James Hammond Pershing, Pennsylvania, *Third Prize.*

DEBATERS.

American Whig Society.	*Cliosophic Society.*
Winthrop M. Daniels, O.	Frederick G. Beebe, N. Y.
Samuel C. Hodge, Conn.	Frederick L. Drummond, N. J.
James H. Pershing, Pa.	George E. Scott, N. Y.

BAIRD PRIZEMEN.

The Baird Prize.	James H. Pershing, Penna.
In Oratory.	Russell Carter, N. J.
In Delivery.	Kemper Fullerton, D. C.
In Poetry.	Thomas M. Parrott, Ohio.
In Disputation.	Samuel C. Hodge, Conn., *First Prize.*
	Frederick J. Knox, N. J., *Second Prize.*

Competitors Appointed for Excellence in English Composition: For Baird Prize and Prize for Oratory—W. M. Daniels, F. L. Drummond, K. Fullerton, E. M. Hopkins, W. H. Johnson, T. M. Parrott, J. H. Pershing, R. E. Prime, Jr., C. S. Smith. *For Prize for Oratory*—H. Anderson, E. T. Carter, R. Carter, H. T. Dobbins, L. Farrand, W. H. Forsyth, B. V. D. Hedges, S. C. Hodge, W. M. Irvine, R. W. McGregor, P. Rioseco, W. H. Runyon, J. F. Talcott, F. A. Waterman, W. W. White, W. A. Wyckoff.

JUNIOR PRIZEMEN.

Junior First Honor Scholar.

Robert E. Speer, Pa.

Maclean Prizeman.

Harry G. Drummond, N. J.

Junior Orator Medalists.

Robert E. Speer, Pa., *First Medal.*
David R. Todd, Kan., *Second Medal.*
Harry G. Drummond, N. J., *Third Medal.*
Thomas W. Hotchkiss, Jr., N. Y., *Fourth Medal.*

Competing Junior Orators.

American Whig Society.	*Cliosophic Society.*
William S. Chase, O.	Harry G. Drummond, N. J.
Thomas W. Hotchkiss, Jr., N. Y.	William J. George, O.
Robert Henry Life, N. Y.	Robert E. Speer, Pa.
Clarence Blair Mitchell, N. J.	David R. Todd, Kan.

JUNIOR HONORMEN.

First Group.

J. M. Brooks, O.
H. G. Drummond, N. J.
L. S. Mudge, N. J.
Fred Neher, N. Y.
R. E. Speer, Pa.

Second Group.

R. O. Aulick, D. C.
A. H. Barr, Pa.
David Bovaird, Jr., Pa.
G. H. Carter, N. Y.
E. R. Hewitt, N. Y.
R. H. Life, N. Y.
E. Y. Robbins, N. J.
T. N. P. Sailer, Pa.
J. F. Stebbins, N. Y.
H. C. Warren, N. J.

JUNIOR HONORMAN, SCHOOL OF SCIENCE.

B. S. Course.

C. J. Montgomery, Ga.

SOPHOMORE PRIZEMAN.

Class of 1861 *Prize.*

John Morris Yeakle, Pa.

FRANCIS BIDDLE PRIZE.

William Sanderson Furst, Pa.

SOPHOMORE HONORMEN.

First Group.

E. P. Burgess, Jr., Mass. — Mr. Noble's School, Boston, Mass.
R. P. Schick, Pa. — Reading High School, Pa.

Second Group.

B. H. Adams, N. J.	The Pingry School, Elizabeth, N. J.
E. B. Baxter, Ga.	Lawrenceville School, N. J.
G. H. Bigelow, Cal.	Westminster School, Cal.
E. L. Bogart, N. Y.	Yale School, Yonkers, N. Y.
J. C. Bucher, Pa.	York Collegiate Institute, Pa.
D. D. Casement, O.	Western Reserve Academy, Hudson, O.
T. F. Chambers, D. C.	Columbian College, Prep. Dept., Washington, D. C.
G. B. Covington, Md.	Maupin's University School, Ellicott City, Md.
G. C. Doolittle, O.	Oberlin College, O.
W. S. Furst, Pa.	Bellefonte Academy, Pa.
W. D. Gibby, N. J.	Princeton Preparatory School, N. J.
A. S. Guffey, Pa.	Greensburg Seminary, Pa.
H. W. Hathaway, N. J.	Jersey City High School, N. J.
J. B. Hillegass, Pa.	State Normal School, Kutztown, Pa.
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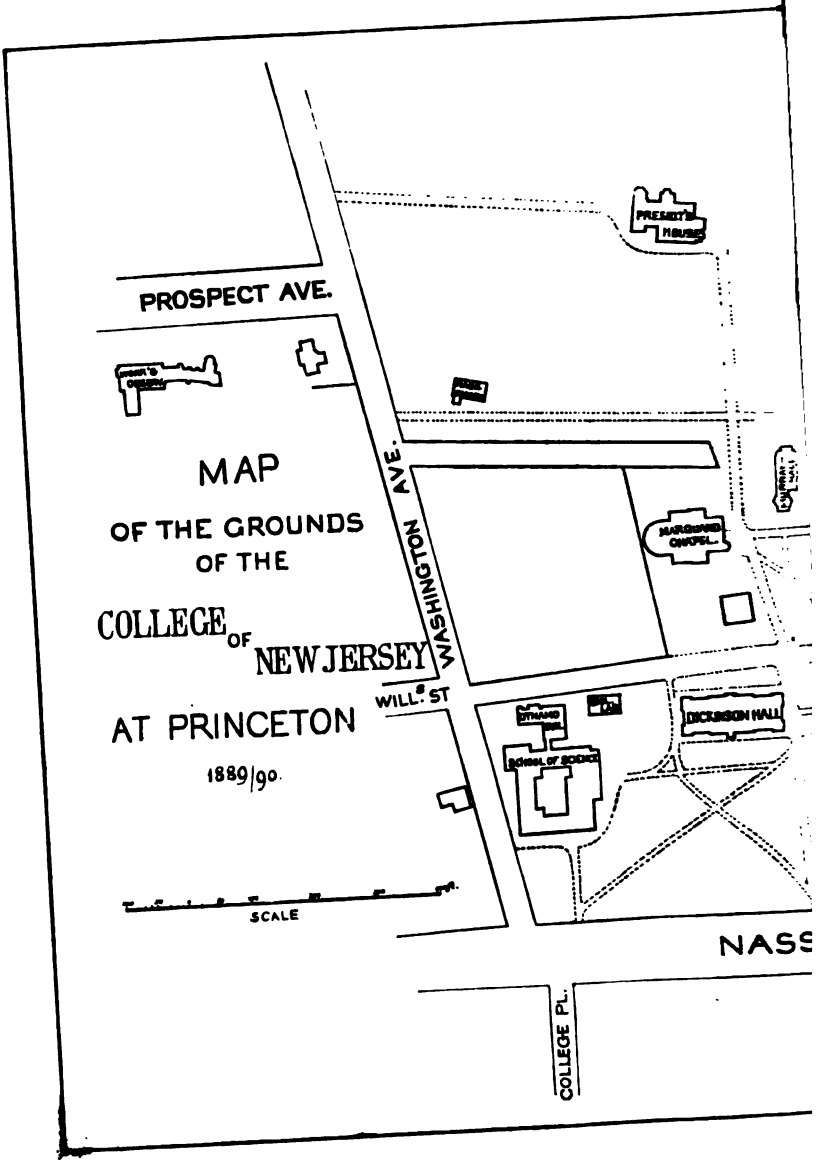
OF THE

COLLEGE OF NEW JERSEY

AT

PRINCETON

1889-90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AT PRINCETON
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CATALOGUE

OF THE

COLLEGE OF NEW JERSEY

AT

PRINCETON

ONE HUNDRED AND FORTY-THIRD YEAR

1889-90.

The Princeton Press.

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CALENDAR.

1889.

Sept. 17–18.	Examinations for admission, in Princeton only.
Sept. 18.	First term begins—College assembles at 3 P. M. in Marquand Chapel.
Sept. 19.	Conditioned and unexamined students assemble in the Old Chapel at 10 A. M.
Sept. 25.	Preliminary examinations for University degrees.
Nov. 14.	Stated Meeting of the Board of Trustees.
Nov. 28.	Thanksgiving Day.
Dec. 18–Jan. 2.	Christmas vacation.

1890.

Jan. 24–Feb. 5.	Examinations.
Jan. 30.	Day of Prayer for Colleges.
Feb. 5.	End of first term.
Feb. 6.	Second term begins.
Feb. 13.	Stated Meeting of the Board of Trustees.
Feb. 22.	Washington's Birthday—Exercises in the Old Chapel.
April 3–8.	Spring Recess.
May 8.	Last day for renewing room agreements for '90–91.
May 14–24.	Senior final examinations.
May 31.	Annual allotment of rooms.
May 28–June 7.	Examinations of the three lower classes.
June 8.	Baccalaureate Sunday.
June 9.	Class Day—Junior Orations, 7:30 P. M.
June 10.	Reading of Theses by Scientific students—Annual Meetings of Literary Societies and Alumni Association—Lynde Prize Debate, 7:30 P. M.
June 11.	143d Annual Commencement.
June 9–11.	Commencement Meeting of Board of Trustees.
June 12–13.	Examinations for admission, held simultaneously in Princeton and elsewhere.
June 13–Sept. 16.	Long vacation.
Sept. 16–17.	Examinations for admission, and on entrance conditions, in Princeton only.
Sept. 17.	First term begins—College assembles a P. M. in Marquand Chapel.

Sept. 18. Conditioned and unexamined students (not candidates for entrance) assemble in the Old Chapel at 10 A. M.

Sept. 24. Preliminary examinations for University degrees.

Nov. 13. Stated Meeting of the Board of Trustees.

Nov. 27. Thanksgiving Day.

Dec. 24–Jan. 7. Christmas vacation.

1889.

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1890.

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1890.

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Organist.

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*Deceased.

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Treasurer's Assistant.

ISAAC JACKSON TURNER,
Superintendent of Gymnasium.

MATTHEW GOLDIE,
Proctor.

STANDING COMMITTEES OF THE FACULTY.

1. *Library.*—Chairman—THE PRESIDENT.
Secretary—THE DEAN.

2. *Schedule of Studies.*—Chairman—THE PRESIDENT.
Secretary—PROF. WEST.

3. *Sanitary.*—Chairman—THE DEAN.
Secretary—PROF. SLOANE.

4. *Assignment of Rooms.*—Chairman—THE DEAN.

5. *College Publications.*—Chairman—THE DEAN.
Secretary—PROF. ORMOND.

6. *Music.*—Chairman—PROF. MARQUAND.
Secretary—PROF. WEST.

7. *Scholarships and Charitable Funds.*—
Chairman—PROF. DUFFIELD.

8. *Teachers and Schools.*—Chairman—PROF. PACKARD.
Secretary—PROF. WINANS.

9. *Out-Door Sports.*—Chairman—PROF. SLOANE.
Secretary—PROF. ROCKWOOD.

10. *University Degrees and Fellowships.*—
Chairman—THE PRESIDENT.
Secretary—PROF. SLOANE.

11. *Catalogue.*—Chairman—THE DEAN.
Secretary—PROF. MAGIE.

CONFERENCE COMMITTEE.

On the Part of the Faculty.—Chairman—THE DEAN.
Secretary—PROF. WINANS.

On the Part of the Students.—Chairman—J. J. CHARLTON.
Secretary—J. C. MEYERS.

CLASS OFFICERS.

ACADEMIC.

1. Seniors, PROF. YOUNG.
2. Juniors, PROF. DUFFIELD.
3. Sophomores, PROF. PACKARD.
4. Freshmen, PROF. FINE.

SCIENTIFIC.

1. Seniors, Juniors and Sophomores, B. S., PROF. CORNWALL.
2. Seniors, Juniors and Sophomores, C. E., PROF. MCMILLAN.
3. Freshmen, PROF. ROCKWOOD.

FELLOWS.

Residence

HOWARD CROSBY WARREN, A.B., ... *Princeton.*

Chancellor Green Fellow in Mental Science.

EDMUND YARD ROBBINS, A.B., ... *Princeton.*

Fellow in Classical Literature.

LEWIS SEYMOUR MUDGE, A.B., ... *Princeton.*

Class of 1860 Fellow in Experimental Science.

JOHN MILTON BROOKS, A.B., ... *Princeton.*

J. S. K. Fellow in Mathematics.

JOSHUA BRUSH GESNER, A.B., ... *Linden, N. J.*

Boudinot Fellow in Modern Languages.

HARRY GURNEE DRUMMOND, A.B., . . . *Newark, N. J.*

Boudinot Fellow in History.

BERTRAM HOWARD WATERS, A.B., ... *Princeton.*

E. M. Fellow in Biological Science.

OLIVER SMITH STRONG, A.B., ... *Princeton.*

Class of 1877 University Fellow in Biology.

WILLIAM RANKIN, A.B., ... *Princeton.*

University Fellow in English.

RICHMOND OGSTON AULICK, A.B., ... *Princeton.*

South East Club University Fellow in Social Science.

GEORGE B. HUSSEY, PH.D., ... *Princeton.*

University Fellow in Archæology.

HENRY RUSSELL PEMBERTON, B.S., ... *Princeton.*

Special Fellow in Biology.

ACADEMIC DEPARTMENT.

PROFESSORS.

I. DEPARTMENT OF PHILOSOPHY.

1. THE EX-PRESIDENT. *Modern Philosophy and Metaphysics.*
2. THE PRESIDENT. *Ethics.*
3. PROF. ORMOND. *History of Philosophy, Logic and Psychology.*
4. PROFS. SCOTT AND OSBORN. *Physiological Psychology.*
5. PROF. SHIELDS. *Harmony of Science and Religion.*
6. PROF. SLOANE. *History and Political Science.*
7. PROFS. PRIME, MARQUAND AND FROTHINGHAM. *History of Art and Archæology.*
8. PROF. WEST. *Pedagogics.*

II. DEPARTMENT OF LANGUAGE AND LITERATURE.

1. PROFS. CAMERON, ORRIS, WINANS AND MR. RODDY. *Greek.*
2. PROFS. PACKARD, WEST AND WESTCOTT. *Latin.*
3. THE DEAN, PROFS. HUNT, RAYMOND, AND DR. MILLER. *English.*
4. PROF. KARGÉ. *German.*
5. PROF. HUNT. *Anglo-Saxon and Early English.*
6. PROF. WINANS. *Sanskrit.*
7. MR. HARPER. *French.*

III. DEPARTMENT OF MATHEMATICS AND SCIENCE.

1. PROFS. DUFFIELD, FINE AND DR. THOMPSON. *Mathematics.*
2. PROF. YOUNG AND MR. REED. *Astronomy.*
3. PROFS. BRACKETT, MAGIE AND MR. DODD. *Physics.*
4. PROFS. SCHANCK, CORNWALL AND MCCAY. *Chemistry.*
5. PROFS. SCHANCK, MACLOSKIE, SCOTT, OSBORN AND DR. RANKIN. *Biology.*
6. PROF. MACLOSKIE. *Botany.*
7. PROF. LIBBEY. *Histology and Physical Geography.*
8. PROFS. SCOTT AND OSBORN. *Geology and Palæontology.*

ADMISSION.

ENTRANCE EXAMINATIONS.

All entering students on their arrival must report at the President's house, and register. Examinations for admission will be written, with supplementary oral examinations if needed. The first examination will commence in Princeton, on Thursday, June 12th, at 11 A. M., and continue through the afternoon of Friday. The second will commence on Tuesday, September 16th, at 11 A. M., and continue through the afternoon of Wednesday. Applicants who have any conditions or other deficiencies from the June examination are required to remove them at this time. *Attendance is required at the beginning of the examinations.*

Simultaneously with the June entrance examinations in Princeton, examinations will also be held in the cities of New York, Philadelphia, Pittsburgh, Cincinnati, Louisville, Chicago, St. Louis, Omaha, Denver, San Francisco; and at preparatory schools and other cities when necessary. The precise places in which the examinations are to be held can be learned by application to the President. Due notice of these examinations will also be published in leading local newspapers for several weeks in advance.

Examinations at other times and places than those specified are inconvenient and often impracticable, and applicants for examination at other than the regular days are required to pay $10 into the treasury.

SUBJECTS.

Candidates for admission to the Freshman class are examined in the following books and subjects. It is recommended that the candidates be prepared for examination on the requirements as specified; but equivalents will be accepted.

English.

English Grammar—Whitney, or equivalent; Modern English History (1558–1880)—Gardiner, Anderson, or equivalent; U. S. History—Johnston, Scott, or equivalent.

The writing of a short essay may be required as a part of the examination; the theme for the essay of 1890 will be based on the life and writings of Prescott or of Bayard Taylor.

The attention of preparatory schools is called to the need of a more thorough study of elementary English; also, to the addition of Modern English History to the English entrance requirements.

Latin.

Latin Grammar; especially the inflections; the simpler rules for composition and derivation of words; syntax of cases and verbs and structure of the sentence in general, with particular regard to relative and conditional sentences, indirect discourse and the subjunctive; so much prosody as relates to accent, quantity, versification in general, and dactylic hexameter. Cæsar (five books of the Commentaries); Sallust (Catiline or Jugurtha); Virgil (six books of the Æneid); Cicero's Select Orations (six); Arnold's Latin Prose Composition (twelve chapters), or Jones' Exercises in Latin Prose; Geography of Ancient Italy.

Greek.

Greek Grammar, including prosody; Xenophon (four books of the Anabasis), or Greek Reader (Goodwin's), 111 pages; Homer (the first two books of the Iliad, except the Catalogue of Ships); Greek composition (Jones' Exercises in Greek Prose, or an equivalent—writing with the accents required); Geography of Ancient Greece and Asia Minor. Goodwin's Grammar is preferred. Special stress is laid upon a thorough knowledge of the noun and verb inflections. Candidates will do well to read an additional book of the Iliad, where this can be done without sacrifice of thoroughness in the formal requisitions. Some experience in giving written answers to set questions is advantageous.

The Continental pronunciation of the vowels and diphthongs is preferred in both Latin and Greek.

Mathematics.

Arithmetic, including the Metric system; Algebra, through quadratic equations involving two unknown quantities—including radicals, and fractional and negative exponents; Plane Geometry.

PRELIMINARY EXAMINATIONS.

At the examinations in June and September, candidates intending to enter the Freshman class one year later are admitted, on request, to examination on a portion of the subjects required for entrance. Unless in exceptional cases, either two of the four general subjects, English, Mathematics, Latin, Greek, must be offered entire: or such parts of at least three subjects as are here prescribed, viz.: in *English*, Grammar and either U. S. History or Modern English History; in *Mathematics*, Arithmetic, with the Metric system, and either Algebra, or Plane Geometry; in *Latin*, the full amount in Cæsar and one other author, with Grammar; in *Greek*, three books of the Anabasis, with Grammar.

In both Latin and Greek Grammar the examination will be upon noun and verb inflections, syntax of nouns and the simpler rules for syntax of verbs. This examination will be partial only, to be completed the following year.

Applications for preliminary examination should be made to the President, with a statement of the subjects and amount offered, at least two weeks previous to the examination.

OTHER REQUIREMENTS.

Candidates for admission to the Sophomore class who have not completed the studies of the Freshman year at another College must first pass an examination on the studies required for admission to the Freshman class.

Candidates for admission to the Sophomore, Junior or Senior class, coming from another College, are examined only in the studies of the year preceding that which they wish to enter, provided they present evidence that they have passed satisfactory examinations on the previous studies of the curriculum and entrance requirements, or their equivalents, excepting French, Anatomy, Botany and Zoology.

Some knowledge of the studies just mentioned is desirable but is not required.

No person is admitted to the College as a candidate for the degree of Bachelor of Arts after the beginning of the first term of the Senior year.

All candidates for admission to any class, or as special students, must bring with them testimonials of good moral character and attainments, preferably from their last instructors; and if the candidate has been a member of another college or university, he must produce a certificate from its President or Faculty that he is free from censure in that institution.

No candidate is admitted into the College without examination and a vote of the Faculty.

Immediately after the opening of the College the entering students meet according to announcement for the registration of their names and subscription to the following pledge, required by the Board of Trustees:

We, the undersigned, do individually for ourselves promise, without any mental reservation, that we will have no connection whatever with any secret society, nor be present at the meetings of any secret society in this or any other college so long as we are members of the College of New Jersey; it being understood that this promise has no reference to the American Whig and Cliosophic Societies. We also declare that we regard ourselves bound to keep this promise and on no account whatever to violate it.

ADMISSION TO SPECIAL COURSES.

In exceptional cases, undergraduate students, not members of any one of the four regular classes nor candidates for a degree, are admitted to the privileges of the College, and allowed to take special courses, selected under the direction of the Faculty, in such a manner as to secure full and profitable employment of their time. Such special students undergo a preliminary examination sufficient to ascertain their preparation for the course proposed, and are subject to the same regulations and discipline and to the same examinations in the studies pursued, as other undergraduates. On completing their course they receive certificates of proficiency. These special courses, however, are not offered to those who have failed in the regular course.

UNDERGRADUATE COURSE OF STUDY.

The course for the degree of Bachelor of Arts extends through four academic years and embraces instruction in the three departments of Philosophy, Language and Literature, Mathematics and Natural Science.

It includes two classes of studies, the required and the elective. The required studies are regarded as fundamental and essential in a liberal education and therefore are not left to the student's option. The elective studies, though important, are not all indispensable and accordingly are left, within definite limits, to the student's choice. Attendance upon all elective studies, when once chosen, as well as upon all required studies, is obligatory. In connection with some departments there are also optional courses, with voluntary attendance.

All the studies of the Freshman year are required, and include Latin, Greek, Mathematics, French, English, and Anatomy.

The Sophomore year consists substantially of required studies, which are Latin, Greek, Mathematics, French, and English, continued from the Freshman year, and, in addition, General History, Logic, Chemistry, Zoology, and Botany. Opportunity is also given in elective courses in Latin, Greek, Mathematics, French and German, for the student to extend his required work in any two of these directions.

In the Junior year the elective system more properly begins. Nearly two-thirds of the student's time is occupied with required studies, which are Psychology, Political Economy, Physics, and English Literature. In addition to these the student chooses three elective studies, some of them open only to Juniors and others to Juniors and Seniors.

In the Senior year the range of electives is wider, required studies occupying about one-third of the schedule time. The required studies are Ethics, Evidences of Christianity, Astronomy, and Geology. Besides these the student selects five elective courses of study.

The various elective courses for Sophomores, Juniors and Seniors are detailed on pp. 53–58.

To prevent confusion and secure intelligence of choice on the part of students, the electives are arranged systematically. As a

rule no elective course is introduced until the student has passed through a required course in the same general department of study. The Sophomore electives are extensions of subjects already familiar to the student in the required courses, and the Junior and Senior electives, though largely new studies, are preceded by suitable required courses.

A further inducement to coherency in choice is found in the provisions for Honors. Apart from the General Honors awarded for general excellence there are Special Honors in the leading departments, in both required and elective studies. The effect of this is to concentrate choice upon cognate studies. The General and Special Honors are described on pp.5 8-59.

In the two lower years the instruction is conducted mainly by recitations. The Freshmen and Sophomores recite in four divisions constituted according to rank and according to their degree of proficiency in the leading studies. They are divided separately for the classics, mathematics, and modern languages. As the work is thus proportioned to individual ability, rapid progress can be made by those who have special aptitudes for certain studies.

Students are required to choose their elective studies for the first term at the beginning of that term, and no changes will be allowed after the close of the third week, and none before that time, except for special reasons approved by the Faculty.

Students are required to hand in writing to the Registrar, on or before the third Monday in January, their choice of electives for the second term, and no changes will be allowed after that date, except for special reasons approved by the Faculty.

If a student be in the lowest Group in any department he shall have liberty to choose his elective studies only in departments in which his previous standing has been above that Group. If he desires any other elective studies he shall send in his proposed list of such studies to the Faculty for approval, and if his choice be not approved, the Faculty shall assign him his electives.

Optional courses, so ordered as not to conflict with the time allotted to the regular instruction of the course, are offered in connection with several departments, under such restrictions as may be prescribed by the Faculty. These courses are designed to benefit

those who wish to extend their reading or study in certain branches; they amplify the subjects taken up in the regular course, and in some cases conclude with a special examination upon which is based a certificate of proficiency. A student may take not more than two optional courses at one time; and only one course, if that course occupies more than two hours weekly.

In awarding the Bachelor's degree and assigning the final rank, the student's work for the whole four years is taken into account.

The following is a statement of the various courses of instruction in the three academic departments:

DEPARTMENT OF PHILOSOPHY.

Mrs. Robert L. Stuart, of New York, gave to the College one hundred and fifty-four thousand dollars, to maintain professorships in the Department of Philosophy, embracing Ethics, Logic, Metaphysics, History of Philosophy and Psychology. She gave this in memory of her husband, the late Mr. Robert L. Stuart, and of his brother, the late Mr. Alexander Stuart.

The Professorships now established on this foundation are those of Psychology and History of Philosophy, Ethics, and Mental Science and Logic.

Besides the undergraduate courses given below, the Department also embraces the courses on Contemporary Philosophy, Plato, and other subjects mentioned in connection with the graduate courses.

Metaphysics.

PROFESSOR ORMOND.

This is a two hour elective course in the first term of Senior year. McCosh's *First and Fundamental Truth* is used as a text-book. The exercises in the text-book will be supplemented by a course of lectures.

Psychology.

PROFESSOR ORMOND.

Psychology is a required study occupying two hours a week during the first term of Junior year. McCosh's Treatises on the

Cognitive and Motive Powers are used as text-books. Half the time is given to lectures and the exercises are accompanied with frequent recitations.

Physiological Psychology.

PROFESSORS OSBORN AND SCOTT.

This is an elective course for the Seniors, consisting of lectures and demonstrations, occupying two hours a week during the first term. It is designed to give a general knowledge of the anatomy and physiology of the nervous system, especially in their relation to current German, French and English researches upon the localization of functions in the brain.

Professor Osborn opens the course with alternate lectures and demonstrations upon the general structure of the nervous system, including nerves and nerve cells, the sense organs, the brain and the principal motor and sensory nerve tracts in the brain and spinal cord. The demonstrations accompany a laboratory course of practical study and dissection of the brain and examination of microscopic preparations. Professor Scott continues the subject with lectures upon the physiology of the nervous system, including the general problems of the origin and transmission of nervous force and the functions of the peripheral nerves, spinal cord and brain. The different theories of the localization of functions in the cerebral cortex are discussed. Experiments illustrating nerve action of different kinds accompany this portion of the course.

History of Philosophy.

PROFESSOR ORMOND.

There are two courses in the History of Philosophy, open to both Juniors and Seniors. The first course, occupying two hours a week during the first term, is upon the Greek and Roman philosophies and follows the development down to the close of the Pagan Schools. Zeller's *Greek Philosophy* is used as a text-book, in connection with which lectures are given.

The second course, occupying two hours a week during the second term, is upon Mediæval and Modern Philosophy. No text-

book is used. The course is given in lectures accompanied with discussions and references for collateral reading.

Philosophy since Kant.

PROFESSOR ORMOND.

This is a two hour elective open to Seniors during the second term. It is mainly historical, following the course of philosophical thought in Germany and Great Britain from Kant to the present day. Criticism is introduced, principally in connection with the bearing of the Post-Kantian development on theories of knowledge.

Science and Religion.

PROFESSOR SHIELDS.

This course embraces the study of the sciences so far as connected with revealed religion; their history, classification, and methods; the normal and existing relations of reason and revelation in the sciences; the emerging scientifico-religious controversies; the problem of their adjustment, and the philosophical system issuing from the growing harmony of science and religion.

While this course involves a new contribution to the scientific evidences of religion as taught in Christian colleges, it aims also to promote that sound ultimate philosophy which results from the correlation of reason and revelation and looks forward to the gradual purification and completion of human knowledge.

It is an elective course extending through the second term of the Senior year. The instruction is given entirely by lectures, with occasional recitations and a final examination.

Elements of Logic.

PROFESSOR ORMOND.

This is a required study during the second term of Sophomore year. The course embraces (1) Deductive Logic — comprising the laws of discursive thought as involved in notions, judgments and reasoning. The Syllogism and other forms of reasoning are discussed. McCosh's Manual of Logic is used as a text-book. (2) A few lectures are given on the elements of inductive reasoning. The entire course is accompanied with lectures and practical exercises.

Advanced Logic.

PROFESSOR ORMOND.

This course will not be given during the present year, in its place a required course of one hour a week in the Elements of Logic will be given in the first term of Junior year. After the present year the course in Advanced Logic will be open to both Juniors and Seniors, and a statement of its scope and requirements will be given.

Ethics.

THE PRESIDENT.

This is one of the required studies of the Senior year. Two hours a week are devoted to it during the first term and one hour during the second term. Instruction is given by lectures accompanied by the use of Calderwood's Handbook of Moral Philosophy as a text-book. The lectures deal with both Theoretical and Practical Ethics and embrace such topics as the foundation of moral obligation, the will, conscience, the nature of virtue, and the moral law. Special attention is given to recent ethical discussions, and portions of representative ethical treatises are recommended for collateral reading.

Evidences of Christianity.

THE PRESIDENT.

This is a required course, occupying one hour a week during the second term of the Senior year.

It is an exhibition or outline of the exceptional evidence that accredits the Christian religion; its aim being to show that Christianity is and that anti-Christian systems are not capable of rational defence.

Courses in History, Politics and Jurisprudence.

*1. Elementary Greek History, one hour a week. Freshman year. Professor Winans.

*2. Elementary Roman History, one hour a week. Freshman year. Professor Westcott.

*3. General Sketch of History (Freeman's). Recitations, lectures and discussions. Two hours a week. First term, Sophomore year. Professor Sloane.

*4. Historical Geography. Eight lectures. Sophomore year. Professor Libbey.

Transitional epochs of history with special reference to the progress of civilization and the science of government.

5. I. *a*. Ancient Oriental History. *b*. Institutions of Greece and Rome. Lectures and recitations. Two hours a week, first term. Open to Juniors and Seniors. Professor Sloane.

6. II. *a*. Mediæval History. *b*. European History to 1688. Lectures and recitations. Two hours a week, second term. Open to Juniors and Seniors. Professor Sloane.

7. English and American History from 1688 to 1776, with reference to the growth and formation of American political institutions. Lectures and recitations. Two hours a week, first term. Open to Juniors and Seniors Professor Sloane.

8. Comparative Politics and the History of Political Theories. Lectures and recitations. Two hours a week, second term. Open to Juniors and Seniors. Professor Sloane.

9. International Law. Lectures and recitations. Two hours a week, second term. Open to Juniors and Seniors. Professor Sloane.

10. Theory and Practice of Parliamentary and Congressional Governments. Papers and discussions. Two hours a week. First or second term. Open to Graduate students. Professor Sloane.

*11. Political Economy, Elementary Course. Recitations (Walker's Political Economy). Two hours a week, first term. Junior year.

12. Political Economy. Lectures and recitations. Advanced Course. Two hours a week, second term. Open to Juniors and Seniors.

13. Philosophy of Law, Public and Municipal. Two hours a week, first term. Lectures and Recitations. Open to Juniors and Seniors.

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* Courses marked with an asterisk are required of every candidate for a degree. The others are elective and may be given but once in two years, according to the demand for them.

14. American Constitutional History. Lectures and recitations. Two hours a week, second term. Open to Juniors and Seniors.

15. The Political History of the United States since 1787. Text book, Johnston's History of American Politics. Recitations and discussions. Two hours a week, second term. Open to Juniors and Seniors.

16. The Common Law. Blackstone's Commentaries. Lectures and recitations. Two hours a week, first or second term. Open to Graduate students.

17. Roman Law. The Institutes of Justinian. Readings, lectures and recitations. Two hours a week, both terms Senior year. Open to graduate students. Professor Westcott.

Pedagogics.

PROFESSOR WEST.

This is an elective course in the Senior year, and occupies two hours weekly in the second term. It consists of lectures supplemented by text-book instruction, and develops the subject in its historical, theoretical and practical relations. A thesis is required at the end of the course.

DEPARTMENT OF ART AND ARCHÆOLOGY.

PROFESSORS PRIME, MARQUAND AND FROTHINGHAM.

I. PUBLIC LECTURES:

Provision will be made for a course of public lectures, of which two will be given in January by Miss Amelia B. Edwards, Secretary of the Egypt Exploration Fund. Dr. John C. Van Dyke, of New Brunswick, will give a short course on Principles of Art as applied to Painting.

II. JUNIOR ELECTIVES (open also to Seniors):

(1) ANCIENT ART. Professor Marquand conducts a general course on Ancient Art, including the Art of Egypt, Assyria, Phœnicia, Greece and Rome. Two exercises a week during the first term. Text book, Reber's *History of Ancient Art.*

(2) MEDIÆVAL ART. Prof. Frothingham conducts a general course on Mediæval Art, including that of the Early Christian, Romanesque and Gothic periods. Two exercises a week during the second term. Text book, Reber's *History of Mediæval Art.*

III. SENIOR ELECTIVES (open to graduates and to undergraduates who have taken at least one of the Junior courses in this department):

(1) ORIENTAL ARCHÆOLOGY. Prof. Frothingham conducts a special course in the Archæology of Egypt and Assyria, and Oriental influences on Greece. Two exercises a week during the first term.

(2) GREEK ARCHÆOLOGY. Prof. Marquand conducts a special course on Greek Architecture. Two exercises a week during the first term.

(3) MEDIÆVAL ART. Prof. Frothingham gives a special course on the Subjects and Symbolism of Early Christian and Mediæval Art. Two exercises a week during the second term.

(4) RENAISSANCE ART. Prof. Marquand gives a special course on Renaissance Art of the 15th and 16th centuries. Two exercises a week during the second term.

DEPARTMENT OF LANGUAGE AND LITERATURE.

Greek.

PROFESSORS CAMERON, ORRIS,* WINANS AND MR. RODDY.

Freshman Year.

The Freshman class has five hours of Greek a week in the first term, and four in the second.

There are at present two courses:

POETRY.—Homer: The Iliad, Books XVI, XVIII, XXII; Epic forms and syntax; prosody and scanning; the Homeric question; antiquities and mythology.

PROSE.—Ordinarily, in the first term Xenophon's Hellenica, in the second Herodotus. The parts selected are those which are most

* Absent during 1889-90.

interesting and have especial historical importance,—tales from the earlier books of Herodotus, the rise of the Persian monarchy, the Persian wars against Greece, the closing scenes of the Peloponnesian war. This is followed by a short course of outlines of Greek history, in English, intended to review and supplement the previous course and to furnish a comprehensive view of the whole subject. The class is trained in reading at sight, and with the advanced sections a considerable amount of Herodotus is thus read.

Also, throughout the year, review of Greek grammar, and of Greek composition, with written exercises and practice in translating continuous passages of English into Greek.

NOTE.—As the authors and the amount read may vary from year to year, the following is indicated as a *minimum* for applicants for Sophomore standing: Homer, books XVI, XVIII, XXII; Xenophon's Hellenica or Herodotus, 100 pages, half at least to be from Herodotus.

Sophomore Year.

Greek has a required course of two hours a week and an additional elective course of two hours a week.

Prof. Orris's required course in 1890–91 will be Demosthenes: the Olynthiacs and Philippics, together with the study of the political condition of Greece in the time of Demosthenes and of Demosthenes' life and influence. Also, Greek prose composition on the basis of the text of Demosthenes, including analyses in Greek of the Olynthiacs and Philippics; dictations on Greek lexicology, stating and explaining the laws pertaining to the formation, derivation and definition of the words of the language.

For 1889–90 the courses are arranged as follows: In the first term, in the required course is read Euripides' Medea, with lectures on the origin of tragedy, the analysis of the play, and the life of the poet. Professor Cameron.

In the elective course, selections are read from Lucian's Dialogues, with collateral study by reading and lectures of the society, religion and literature of the second century A. D. Professor Winans.

In the second term, the required course is Xenophon's Memorabilia. A selection is made of the more interesting parts of the

memoirs, especially of such as are important to subsequent philosophical study. In addition most of the work is read at sight. Such general subjects are treated as the life of Xenophon; review of his works; his relations to Socrates as pupil and biographer; review of the political history of the period; the Socratic system of ethics; the method and influence of Socrates as a teacher. Professor Winans.

The elective course is Demosthenes' Olynthiacs and Philippics, with collateral study of the history of his times and of Demosthenes' political activity and influence. Professor Cameron.

Junior Year.

Greek is an elective study in Junior year, two hours a week, conducted in the first term by Professor Winans, in the second by Professor Orris.

Prof. Orris reads a work of Plato and lectures on the Platonic philosophy. This course will be given in 1890–91. As an alternate course the Prometheus Bound or the Agamemnon of Æschylus, with lectures on the origin and character of the Attic Drama and its relations to modern literature.

Professor Winans reads selections from Thucydides the present year (1889–90), books VI and VII, the Sicilian Expedition. Subjects for collateral study are the history of the period covered by Thucydides' work, the life of Thucydides, criticism of his style and merits as a historian. In alternate years (as in 1890–91) the course will be Aristophanes, with lectures on the Dionysus myth and worship; the development and history of comedy; review of Aristophanes' extant works and the fragments; Aristophanes' literary criticisms, and his attitude toward the philosophical, social and political movements of his time; the presentation of comedies; the metres of comedy.

Senior Year.

There are three independent elective courses in Greek open to Seniors in both terms.

I. Sophocles, the Oedipus Tyrannus. Criticism of the play, the plot, the significance of the tragedy. Description of the Greek

theatre. Lectures on the physical geography of Greece as affecting the character and language of the people; the origin of the Greek alphabet; the characteristics of the Greek language; rise and character of Greek literature; epic poetry; lyric poetry; history; tragedy; comedy; oratory; philosophy; Greek antiquities; manners and customs; remains of cities and buildings. Throughout the year. Professor Cameron.

II. Aristotle, The Nicomachean Ethics. The first term. Professor Orris. In the second term Professor Orris's course in Plato (or Æschylus) is open to both Seniors and Juniors. [See Junior year.] These courses will be given in 1890–91.

III. In the first term Professor Winans's course in Thucydides (or Aristophanes) is open to both Seniors and Juniors. [See Junior year.] In the second term, this year, a play of Æschylus,—thereafter, probably Lyric poetry. Professor Winans.

School at Athens.

This College, in connection with others, assisted in establishing and contributes to the support of the American School of Classical Studies at Athens. This school affords facilities for archæological and classical investigation and study in Greece, and approved graduates of this College are entitled to all its advantages free of tuition. Professor Orris is in Athens as Director of the School for the current year. Professor Sloane represents Princeton in its Managing Committee.

Latin.

Professors Packard, West and Westcott.

Freshman Year.

The Freshman Class has four hours of Latin a week, all required. The authors read are Livy, Books I, XXI, XXII. Cicero De Senectute and De Amicitia. Horace's Odes. Optional, Nepos and Ovid. Roman History to the period of the Gracchi is studied in connection with Livy. Latin Composition in oral and written exercises.

Sophomore Year.

The Sophomore Class has two hours of required Latin and, in addition, two hours elective throughout the year.

Professor Packard's required course in the first term, with half of the class, is Selected Letters from Cicero's Correspondence, with Lectures upon the representative persons and events of the period, and study of the history of the Gracchi to Julius Cæsar. In the second term, with half of the class, Cicero De Oratore, or Horace's Satires and Epistles, with Lectures on the Augustan Literature.

Professor West's required course in the first term is Terence: Andria and Adelphoe, and Selections from Catullus. Second term; Terence: Heauton Timorumenos and Phormio, and Selections from Catullus. Collateral topics investigated are the principles of language-change embodied in the metres; the literary obligations of Terence to Plautus, and of both to early Latin literature and the Greek comedians; the social life of Rome in the second century B. C.; and the relations of ancient to modern comedy.

Professor Westcott's elective course is, first term, Tacitus: Agricola and Selections from the Histories, or Germania and Selections from the Annals. Special study of Tacitus' language and style, and the political history of the Early Empire. Second term: Study of the forensic career of Cicero and reading orations illustrative thereof; and with a picked division of the class, study of the history of the Civil Wars, from original authorities.

Junior Year.

Elective courses only, two hours a week through the year. Professor Packard, in the first term, reads with the class (Juniors and Seniors) selected Satires of Juvenal, and selected Letters of Pliny, with a course of lectures upon the Earlier Empire, illustrating especially its moral and religious aspects in contrast with Christian truth and life. Optional collateral reading, Seneca, Epistolae ad Lucilium, Cicero de Officiis.

Professor West, in the second term, reads, with Juniors and Seniors, Plautus: Miles Gloriosus and Trinummus. Sight reading, Quintus Curtius, probably.

Senior Year.

Elective courses only, two hours a week through the year. Professor Packard, in the first term, Selections from Tertullian and other Latin Fathers. In the second term, Lucretius, with Lectures upon the poem, and also upon the general principles of Linguistics, or extended course in Latin Fathers.

Professor West, first term, Quintilian: De Institutione Oratoria. Second term. Course in Plautus. Open to both Seniors and Juniors. See above.

Professor Westcott, through the year. Institutes of Justinian (Holland's text), with Morey's Outline of Roman Law and Lectures.

English Literature.

PROFESSOR MURRAY.

The study of English Literature is pursued throughout the Junior and Senior years; in the former as a required and in the latter as an elective course.

Junior Year.

The required course occupies two hours a week. In the first term the subjects to be studied are Chaucer, Spenser, Early Prose Writers, Rise of the English Drama, Dramatists before Shakespeare, especially Marlowe; Dramatists of the later period, especially Ben Jonson and Webster.

In the second term the authors discussed are Bacon, Dryden, Milton, Sir Thomas Brown, the chief writers of the Queen Anne Period. The required course ends with the study of the Literary Restoration in which Gray, Cowper, Burns, Wordsworth, and Keats are considered.

Senior Year.

Two hours a week are assigned to the elective course. In the first term, the course is wholly occupied with Shakespeare. Selected plays, especially the great tragedies, are studied in the class-room and the course is supplemented by lectures on other plays. In addition to the study of Shakespeare, lectures on folk-lore may be given in this course.

In the second term, the Victorian Literature, including leading American authors, will be treated. The authors considered will be Tennyson, Browning, Arnold, Carlyle, the novelists, and in American Literature, Irving, Hawthorne, Bryant, Longfellow, Lowell, and Motley.

Essays also are required from both the Junior and Senior classes.

English Language and Discourse.

PROFESSOR HUNT AND DR. MILLER.

Freshman Year.

The elements of Discourse are studied as embraced in the following subjects: theme, choice of material, diction, structure, figures, processes, and laws. The study of English words, as given in Trench (Study of Words), is also pursued. Essay writing is an essential part of the course, and is continued through the year.

Sophomore Year.

The study of advanced Discourse—its principles, qualities and forms—is pursued. Also, English Prose style—its periods and forms, and the historical study of the English language. Essays are required throughout the year. Lectures on English Philology.

Junior Year.

The study of Anglo-Saxon and Early English, as an elective branch, is begun. On the basis of March's and Sweet's text-books, the student is drilled in the forms and principles of grammar and taught to read with ease the best prose and poetry of First English. In connection with this grammatical and textual study, instruction is given by lecture on a large variety of subjects—philological and historical—rightfully included in such a course. The students are also encouraged to private reading on any of the topics presented in the class-room. Beówulf and Caedmon are read as an advanced course. In middle English, Chaucer and Piers Plowman are studied on the basis of texts given in Clarendon Press Editions.

Oratory and Æsthetic Criticism.

PROFESSOR RAYMOND AND DR. MILLER.

Freshman Year.

First term, weekly lectures and drill in elocution, explaining the meanings and teaching the methods of gesture and vocal emphasis, with readings and declamations required from all the class. Also, instruction in the methods of dividing and elaborating oratorical themes. Text-book, Raymond's Orator's Manual.

Sophomore Year.

Exercises according to degrees of proficiency. Two private rehearsals of declamations and one written oration required from all, supplemented by a voluntary course in vocal culture.

Junior and Senior Years.

Oratorical delivery and composition, and the analysis and illustration of themes. In Junior year one written oration and two rehearsals in delivery are required from all; in Senior year two written orations, two rehearsals, and public speaking before the College in which there are contests for various prizes in oratory, poetry and disputation. (See heading "Prizes and Competitive Scholarships.") There is an endeavor to adapt the course, as continued through these two years, to the individual needs of students; and opportunities are afforded for voluntary work, together with training, thorough and complete, in vocal culture, and instruction in the principles of æsthetic criticism, as applied to elocution and rhetoric and to poetry and the other arts.

Exercises in English Composition.

These are prepared under the supervision of the professors of English literature, discourse and oratory, and are carefully examined and corrected. The requirements are: Freshman year, four essays; Sophomore year, two essays, a written debate and a written oration; Junior year, two essays and an oration; Senior year, one essay and two orations. In every year of the course several prizes or honorary appointments are given for excellence in essay writing

and in public address, either by the College, or by the Cliosophic or American Whig Societies, acting through committees appointed from their own members in the Faculty. (See heading "Prizes, Scholarships.")

French.

MR. HARPER.

French, under Mr. Harper, begins as a required study with the second term of Freshman year and continues until the end of the first term of Sophomore year, two hours weekly. Each class recites in four sections. Grammatical forms, the simpler rules of syntax, and translation from English into French, together with the reading of some French text constitute the course of instruction in Freshman year. The text books used last year were Whitney's Practical Grammar, Florian's Fables and Voltaire's History of Charles XII. Careful attention is paid to pronunciation, and dictation exercises are constantly used during both years for the purpose of training the ear.

The object in Sophomore year is to give the student practical command of ordinary literature in its various styles and, to that end, to make him master of the principles of normal syntax and familiar with characteristic idioms. Grammatical study is continued and some attention is given to the fundamental principles of the historical development of the language. In the selection of texts the largest share of attention is ordinarily devoted to prose of this century.

There is also an elective course of two hours weekly, running through the entire Sophomore year. For those who choose this course there will be given an opportunity for more extended reading, and acquaintance with a much greater variety of authors. Last year this study was required during the whole time, and the books read were Hachette's Second Reader, Lamartine's La Bataille de Trafalgar, Daudet's Siège de Berlin et Autres Contes, Price's Choix de Contes de Daudet (this last for sight reading only), Les Deux Sourds by Moinaux, Molière's Le Médecin Malgré Lui, and Victor Hugo's Ruy Blas. The selection varies from year to year.

An optional class for Sophomores, meeting weekly in the evening during nearly the whole year, read with Professor Westcott a

considerable number of texts, mostly plays representing the modern and classical drama. A similar class will be held this year, by Mr. Harper.

An elective course is open to Seniors and Juniors, two hours weekly for both terms. It extends over two years, dealing historically with French literature as a whole, and involving the reading of a large number of texts, representative of the chief epochs in the last three centuries. The first half of the course (1889–90) extends from Corneille to Voltaire; the second half (1890–91) from Voltaire to our own day.

Professor Westcott conducted during the greater part of last year an optional class in Italian, open to upper classmen.

German.

PROFESSOR KARGÉ.

Sophomores and Juniors.—The preliminaries of instruction in a modern language being an accurate knowledge of grammar forms and familiarity with sounds peculiar to it, the first term will be devoted mainly to those subjects.

The second term involves reading of easy prose and poetry, also written exercises twice a week, consisting of translations from English into German, with a view to gain a vocabulary and to practically apply the grammar rules already in the student's possession.

Seniors.—In order to thoroughly impress the grammar forms and the essential principles of syntax, in the study of which the student has been engaged the previous year, a number of approved contemporary prose authors will be read during the first half of the first term. Written translations in German of material adapted to the progress of the class will be also insisted upon twice weekly during the entire year, these being designed for work outside of the class room.

Second term. As proficiency in reading current German literary and scientific works is the object desired, copious extracts from eminent authors will be read and commented upon.

A course of twelve lectures will be given during this term, embracing the successive stages of the growth and development of the language, including all the noteworthy events of its literature.

Sanskrit.

PROFESSOR WINANS.

Sanskrit is a two hour elective course in Senior year. Students are requested to advise with the professor before electing it. In the grammatical study special attention is paid to the bearing of the language on philology and comparative grammar. The various phenomena of the language, its sounds, roots, forms, inflections, are considered with some detail in relation to those of other Aryan tongues. The following is an outline of the early stages of the course; Sanskrit Primer (Perry), a series of graded lessons on the plan of Greek and Latin first lessons; reading of several books of the Nalopâkhânam, an episode in the great Hindoo epic, the Mahâbhârata, with review of Sanskrit grammar (Whitney's); then, selections from the Hitôpadeça.

Semitic Languages.

PROFESSOR FROTHINGHAM.

This new course consists at present of an elective in Hebrew running through Junior and Senior years. The first year is devoted to elementary work and the study of Hebrew grammar. In the second year a large part of the time will be given to a rapid reading of texts and the grammatical training will be supplemented in the second term by studies in comparative Semitic philology with especial reference to Syriac, Arabic and Assyrian. There will be two exercises every week.

DEPARTMENT OF MATHEMATICS AND NATURAL SCIENCE.

Mathematics.

PROFESSORS DUFFIELD AND FINE AND DR. THOMPSON.

In the Freshman year there are two exercises a week throughout the year in algebra and plane trigonometry under Professor Fine, and two exercises a week throughout the year in geometry under Dr. Thompson.

The text books in algebra are Wells' University Algebra, supplemented by lectures on the theory of equations, and Fine's Forms of Number. Loomis' Trigonometry is the text-book in trigonometry. In geometry the text-book is Wentworth's New Plane and Solid Geometry, supplemented by a brief course in Euclid's Elements.

The *required* course in mathematics of the Sophomore class is two hours a week throughout the year, and includes the following studies: analytical trigonometry, mensuration, navigation, spherical trigonometry and the elements of analytical geometry. The *elective* course, of four hours a week throughout the year, includes the same studies as the *required*—the course in analytical trigonometry and analytical geometry being more extended—and in addition the elements of the differential and integral calculus. The text-books are Loomis' Analytical Trigonometry and Bowser's Analytical Geometry and the Calculus. Professor Duffield will have charge of the instruction of the Sophomore Class in mathematics with such assistance as may be necessary.

To Juniors the choice is offered between two elective courses in Mathematics. In each there are two exercises a week throughout the year.

(1) A course conducted by Professor Duffield with Bowser's Analytical Geometry and Calculus as the text-books.

(2) A course in Modern Geometry, conducted by Professor Fine. The text-book is Salmon's Conic Sections, supplemented by lectures on modern synthetic geometry, in particular the geometry of position. This course is open to Seniors also.

To Seniors either or both of the following elective courses are open:

(1) The course already described as Junior (2).

(2) A course in the differential and integral calculus based on Williamson's text-books, with lectures on the calculus of the complex variable and on the applications of the calculus to mathematical physics. Two hours a week throughout the year.

Also any one of the following *University* courses is open to a student who has taken Junior (2) in his Junior year and elects Senior (2) in his Senior year:

(3) A course in differential equations two hours a week during first term. Text-book, Forsyth's Differential Equations, supplemented by lectures.

(4) A course in the theory of functions based on the treatises of Durège and Clebsch and Gordan. Two hours a week during second term.

(5) A course in the geometry of the higher algebraic curves and surfaces based on Salmon's Plane Curves and Geometry of Three Dimensions. Two hours a week throughout the year.

These Senior courses are conducted by Professor Fine.

Astronomy.

PROFESSOR YOUNG AND MR. REED.

General Course—Required.

The course occupies three hours weekly during the first half of the year. There are two examinations, one just before the Thanksgiving recess, and one at the close of the course.

In the first half of the course the principal subjects treated are astronomical instruments, the methods of finding time, latitude and longitude, the earth in its astronomical relations, the moon, the sun and eclipses. In the second part, the planetary system and the stars are discussed.

The aim of the course is to impart a knowledge of the most important facts of the science, with an understanding of its principles, but the higher mathematics of the subject are not attempted. The text-book is Young's Text-book of General Astronomy. The class have opportunities for examining the most interesting objects with the telescope.

Practical Astronomy—Elective.

One exercise weekly during Senior year. Text-book, Loomis' Practical Astronomy. The exercises consist of lectures upon the various instruments and their uses, with recitations from the text-book, and the discussion of the observations made by the class.

When the weather permits, each member of the class is required to spend from two to six hours weekly in making and reducing

observations. The principal subjects embraced in the course are the following:

I. SEXTANT AND REFLECTING CIRCLE.

(a) Adjustment and theory of errors.

(b) Determination of latitude and local time by altitudes of the the sun (or stars.)

(c) Latitude by altitude of the pole star and a corresponding southern star.

(d) *Latitude by circum-meridian altitudes of the sun.*

(e) *Determination of the eccentricity and graduation errors of the instrument.*

II. TRANSIT INSTRUMENT.

(a) Adjustment and theory of errors.

(b) Determination of local time by star observations.

(c) *Reduction of a complete set of time observations by the method of least squares.*

III. THE ZENITH TELESCOPE.

(a) Determination of latitude from star observations, the instrumental constants being independently determined.

(b) *Determination of latitude, together with the instrumental constants, by observations reduced by the method of least squares.*

IV. PRIME VERTICAL INSTRUMENT.

Determination of latitude and instrumental constants by star observations.

V. ASTRONOMICAL THEODOLITE.

(a) Azimuth by observations of the pole star.

(b) *Latitude and time by Gauss' "three star method."*

VI. MERIDIAN CIRCLE.

(a) Determination of instrumental constants.

(b) Determination of star places.

(c) *Investigation of errors of graduation and periodic errors of micrometer screw.*

VII. EQUATORIAL.

(a) Adjustment of the instrument.

(b) Determination of the place of a comet or minor planet by the ring or square micrometer.

(c) Study of the spectra of sun spots and solar prominences.

(d) *Measurement of double stars with the wire micrometer.*

VIII. MISCELLANEOUS.

(a) Use of ephemerides.

(b) Corrections for refraction.

(c) Reduction of mean star places to apparent.

(d) Treatment of equations of condition.

(e) Value of level divisions determined with the "level-trier."

(f) Determination of personal equation with Eastman's personal equation machine.

(g) *Form and size of transit instrument pivots determined with pivot spherometer.*

NOTE.—The italics denote problems regarded as supplementary. For want of time they are not generally all taken by any one member of the class, but are distributed according to circumstances.

Physics.

PROFESSORS BRACKETT AND MAGIE AND MR. DODD.

Junior Year.

REQUIRED COURSE.—This course is conducted by means of recitations and lectures with experimental demonstrations. Anthony and Brackett's Text-book of Physics is used. The subjects treated are:

First term—elementary mechanics; general properties of bodies; hydrodynamics; pneumatics; heat and thermodynamics.

Second term—magnetism; electrostatics; electrodynamics; acoustics; optics.

Four hours a week during the first term and three hours a week during the second term, are allotted to this course.

Senior Year.

ELECTIVE COURSES.—*Practical Physics.* This course involves practical work in the Physical Laboratory, and affords opportunity for the extended study of special topics.

The students pursuing this practical course use, as a guide in their work, Stewart and Gee's Elementary Practical Physics, and are, in addition, referred to the special manuals and memoirs accessible in the Library of the College. One hour a week is devoted to recitation and lecture, and at least two hours a week must ordinarily be spent in laboratory work.

The following are among the problems assigned: determinations of the intensity of the force of gravity at Princeton, by the method of Kater and by that of Borda; determination of the modulus of elasticity for different metals; determination of the magnetic declination and of the horizontal component of the earth's magnetism, by means of the magnetometer; determination of the magnetic dip and of the total magnetic force by means of the dip circle; measurement of the electromotive force of various elements by means of the absolute electrometer and by means of the quadrant electrometer; measurement of electric currents by means of the voltameter and by means of the tangent galvanometer; verification of Faraday's laws of electrolysis; determination of the efficiency of the dynamo-machine; measurement of the work expended in maintaining an incandescent lamp in action, by means of the electric relations of the circuit, and by means of the calorimeter; determination of index of refraction by several methods; verification of Fresnel's researches in diffraction; measurement of wave lengths of light by simple diffraction methods and by means of the spectrometer; examination of the phenomena and laws connected with polarized light; determination of thermal conductivities; determination of specific heats by various calorimetric methods; investigation of radiant heat by means of Melloni's apparatus.

Theoretical Physics.—A course in theoretical physics is also offered, to consist of the reading and discussion of a treatise on some special department of physics, with experimental demonstrations. The book read last year in this course was Glazebrook's Physical Optics.

Chemistry.

PROFESSOR SCHANCK.

Students in the Academic Department attend a required course in general chemistry throughout the first term of Sophomore year, and an elective course during the first term of Junior year.

The course of instruction in general chemistry occupies two hours in the class-room each week, and in this course the attempt is made to give quite fully the leading principles and facts of general chemistry, enforced by carefully prepared experimental illustrations. Besides these table illustrations, free use is made of lantern projections. The advantage of taking notes and of reading, in connection with the lectures, such works as Roscoe's, Remsen's, Richter's, Wurtz's, Miller's, and Roscoe and Schorlemmer's, is appreciated and urged upon the class.

Laboratory Chemistry.

PROFESSORS CORNWALL AND MCCAY.

This course in chemistry constitutes an elective study during the first term of the Senior year. The course includes lectures by Professor Cornwall, with occasional recitations, and also work in the Laboratory under Professor McCay. Qualitative chemical analysis is first taken up, the students learning to detect single bases and acids, acquiring thereby sufficient training to pursue further the study of qualitative analysis without supervision, should they desire to do so. At the same time they are required to explain fully, by chemical formulas and written explanations, all of the reactions involved in making the tests.

During the latter part of the term, experiments illustrating principles of general chemistry and chemical physics are first performed by the students, after which the most important classes of organic compounds are studied, and finally a few special examinations are made, such as: analysis of potable waters; examinations of milk; study of the general properties of the alkaloids, with a few characteristic tests; properties of disinfectants. The object of the course is to train the student, as far as possible, in chemical manipulation, by means of experiments which shall both illustrate

chemical principles and furnish practical knowledge likely to be of use in any subsequent professional or scientific study.

The course requires five or six hours a week; three or four hours being generally devoted to laboratory work, and two hours to lectures and recitations.

Special students will not be admitted to this course unless proficient in general chemistry.

Physical Geography.

PROFESSOR LIBBEY.

This course occupies two hours each week throughout the second term of Senior year, as an elective study. It consists of the study of the earth in the age of man, and comprises two parts:

A. THE GEOGRAPHY OF NATURE, or physical geography proper.

1. The earth in the solar system; astronomical geography, especially with reference to climatology.

2. The earth as a whole, or physics of the globe; its form, dimensions, density and weight; its proper temperature, volcanoes, geysers and earthquakes; its magnetism.

3. The surface of the earth:

   a. The lands, their arrangement; morphology of the continents; laws of relief.

   b. The waters, inland waters and continental drainage, erosion; oceanography, tides and marine currents, surface and deep sea temperatures.

   c. The atmosphere, climatology, laws of distribution of temperature; winds and storms; rain, snow, ice and glaciers.

4. Laws of the distribution of plant and animal life.

B. GEOGRAPHY OF MAN. The relations of physical geography to the history of mankind.

   a. Human races; the historic races and their function in history; characteristics and law of distribution, as contrasted with the distribution of life in nature.

b. The continents as instruments for the development of human society; their special functions in the progressive development of mankind.

Lectures, with written recitations, and examination. The course is abundantly illustrated by maps and diagrams and the lantern is used to illustrate the phenomena treated of by means of a series of views from nature, numbering upwards of four thousand.

Text-books recommended: — Physical Geography, Guyot; Earth and Man, Guyot. A collateral course of reading is outlined as the study proceeds.

Courses in Biology.

The required course in Biology is designed to give all academic students a general knowledge of the structure and functions of the human body and of the principles of Zoology and Botany; these subjects are required studies of the Freshman and Sophomore years, consisting of lectures, illustrated by models and diagrams and accompanied by some practical exercises upon animals and plants. The second, or higher, division of the course is entirely elective and embraces a number of related lecture and laboratory courses extending through the Junior and Senior years; they cover the theoretical study of Vertebrate and Invertebrate Morphology, Embryology and Histology, Vertebrate Palæontology, with personal instruction in practical biological methods and some simple original investigation in the form of a graduation thesis. The purpose of these courses is to offer the main facts and principles of Biology in theoretical and practical training as a foundation either for the study of medicine or for the advanced University courses in preparation for teaching and research.

Students entering for *Special Honors in Biology* must have attained a rank equivalent to II Group in courses I and II, or qualify themselves by a special examination for this rank, and pursue courses III–VI inclusive under the usual regulations of Special Honor work. In place of the separate theses mentioned under Courses IV–VI, the student may select a thesis from one of these courses, which must show a higher standard of work. To fill the six hours elective work Seniors must elect Laboratory Chemistry.

I. Human Anatomy and Physiology.

PROFESSOR SCHANCK.

Professor Schanck gives a course consisting of a series of lectures, illustrated by manikin, models and diagrams, upon human Anatomy and Physiology, occupying nearly or quite all of second half of Freshman year.

II. Zoology and Botany.

PROFESSOR MACLOSKIE AND DR. RANKIN.

This course, two hours weekly in the second term of Sophomore year, consists of lectures upon General Zoology, illustrating the principles of classification, methods of investigation and fundamental laws of biological philosophy. This is followed by a series of recitations in Botany accompanied by practical work in the examination of plants. Text-books: Packard's *Elementary Zoology* and Macloskie's *Elementary Botany.*

III. General Biology.

PROFESSORS MACLOSKIE AND OSBORN.

This is an elective in the Junior year, occupying one lecture hour and two hours of laboratory practice a week. The text-book used for the course is Marshall and Hurst's *Practical Zoology.*

A. INVERTEBRATE MORPHOLOGY.—BOTANY.

The course in the first term is conducted by Prof. Macloskie and Dr. Rankin in the Biological Laboratory and includes lectures upon and the dissection of representative types of plants and invertebrate animals with especial attention to their embryology and life history.

B. VERTEBRATE MORPHOLOGY.

The course in the second term is conducted by Prof. Osborn and Mr. Phillips in the Morphological Laboratory, (Class of '77 Building), including lectures upon the Comparative Anatomy of the Vertebrates and a practical course of dissection upon the lower vertebrate types, such as the Lancelet and the Frog.

IV. Histology.

PROFESSOR LIBBEY.

This study is an elective, occupying one afternoon each week during the second term of Junior year, and it is also open to the Senior class at the same time. It consists of a series of lectures and demonstrations with laboratory work in microscopic anatomy. Only the normal tissues are discussed, and as wide a range of comparative study of the tissues in the animal kingdom is made as the time allotted permits.

Especial attention is devoted to the methods of injecting, hardening, preserving, staining and mounting specimens, and the students are carefully drilled in section cutting and in the use of the microscope, every facility being afforded the student to enable him to do good work.

The laboratory is open at all hours to its regular students for private investigations, and the Professor or the E. M. Fellow in Biology will be in attendance every afternoon to give assistance to those who may be present.

A good library and reading room are connected with the laboratory for the use of its students.

A fee of $10 is charged to cover mounting-material, slides, etc., as each student retains the set of specimens prepared as his own.

Text-books recommended:—Schaefer, Klein, Prudden.

V. Advanced Biology.

PROFESSORS MACLOSKIE AND OSBORN.

This is a Senior elective, occupying one lecture hour and two laboratory hours weekly.

A. INVERTEBRATE MORPHOLOGY, PLANT HISTOLOGY.

Professor Macloskie and Dr. Rankin conduct the course for the first term upon the Comparative Anatomy and Histology of one of the larger groups of invertebrate animals, and a single division of the plants, closing with the preparation of a thesis embodying original research. Text-books: Brook's *Anatomy of the Invertebrates* and Strassburger's *Botanisches Prakticum*.

B. Comparative Vertebrate Anatomy, Embryology.

Professor Osborn and Mr. Phillips conduct the latter half of the course upon Vertebrate Anatomy and Embryology. The lecture course is upon the structure and evolution of the principal vertebrate organs and upon the principles of Biology, including a discussion of the Evolution Theory. The laboratory course is upon the development of the chick, following Foster and Balfour's *Elements of Embryology*, with instruction in the technique of embryological methods. The five closing weeks are given to the preparation of a thesis in Embryology. A fee of $4.50 is charged for the use of laboratory instruments, reagents and material, subject to a drawback.

During the winter months an optional course of lectures upon Vertebrate Embryology is given by Prof. Scott in Geological Hall.

VI. Palæontology.

Phylogeny and Comparative Anatomy of the Vertebrates.

Professors Scott and Osborn.

This is a Senior elective occupying one lecture and two laboratory hours weekly. The lectures by Prof. Scott cover the general subject of Vertebrate Palæontology and Comparative Osteology, treating especially the succession of reptilian and mammalian life of North America. The laboratory work of the first term is conducted by Prof. Osborn and Mr. Phillips in the Morphological Laboratory, as a parallel course of anatomical demonstrations and dissection of the fishes, birds, reptiles and mammals typical of the larger living groups, with practice in anatomical drawing. The second term, in the Palæontological Laboratory under Prof. Scott, is given to the examination of various fossil types accompanied by museum demonstrations and comparative osteological study. The course closes with an original thesis upon one of the fossil vertebrates. Text-books: Huxley's *Comparative Anatomy of the Vertebrates*, Wiedersheim's *Comparative Anatomy*, (Parker).

EXHIBIT OF STUDIES.*

NOTE.—The numbers indicate hours per week. Bible, Oratory and Essays are required throughout the four years.

FRESHMAN YEAR.

ALL REQUIRED.

First Term.		*Second Term.*	
Latin,	4	Latin,	4
Greek,	5	Greek,	4
Mathematics,	4	Mathematics,	4
English,	2	Modern Languages,	2
		Anatomy,	1
	15 hours.		15 hours

SOPHOMORE YEAR.

REQUIRED.

Latin,	2	Latin,	2
Greek,	2	Greek,	2
Mathematics,	2	Mathematics,	2
Modern Languages,	2	English,	2
History,	2	Logic,	2
Chemistry,	2	Zool. and Bot.,	2
	12 hours.		12 hours.

ELECTIVE.

(Student to take two Electives—4 hours.)

Latin,	2	Latin,	2
Greek,	2	Greek,	2
Mathematics,	4†	Mathematics,	4†
French,	2	French,	2
German,	2	German,	2
	16 hours.		16 hours.

*This Exhibit of Studies contains a statement of the courses as they will be arranged in the next academic year. The arrangement of the courses for this year differs slightly from that here presented, to facilitate the transition from the old to the new curriculum.

† Excuses from the 2 hours *Required* Mathematics.

JUNIOR YEAR.

REQUIRED.

First Term.		*Second Term.*	
Physics,	4	Physics,	3
Psychology,	2	Political Economy,	3
English,	2	English,	2
	8 hours.		8 hours.
(Students to take three Electives—			6 hours)
	14 hours.		14 hours.

To enter for Junior Honors in any department, the student must take 4 hours Elective work in that department.

JUNIOR ELECTIVES.

Electives in *Italics* open to both Juniors and Seniors;—(ordinarily) alternating subjects. A brace indicates alternating courses.

Electives in Roman open to Juniors only;—same subject each year.

I. Mental Philosophy.

First Term.		*Second Term.*	
[*History of Philosophy,*	2]	[*History of Philosophy,*	2]
[*Advanced Logic,*	2]	[*Plato* (*Greek* O.),	2]

II. Political Science and History.

(*Ancient History,*	2)	(*Med. and Mod. History,*	2)
(*Comp. Politics,*	2)	(*Hist. Pol. Theories,*	2)
[*Am. Const. History,*	2]	[*International Law,*	2]

III. Classics.

[*Latin* (P.),	2]	[*Latin* (West),	2]
[*Greek* (Winans),	2]	[*Greek* (O.),	2]

IV. Modern Languages.

[*French,*	2]	[*French,*	2]
German,	2	German,	2

V. Mathematics and Mathematical Sciences.

Mathematics D.,	2	Mathematics D.,	2
[*Mathematics*, Fine,	2]	[*Mathematics*, Fine,	2]

VI. Natural Sciences.

General Biology,	2	General Biology,	2
Chemistry,	2	Histology,	2
Anglo-Saxon,	2	*Early English*,	2
Hebrew,	2	*Hebrew*,	2
Hist. Art,	2	*Archæology*,	2

JUNIOR ELECTIVE EXCLUSIONS.

	First Term.	*Second Term.*
A.	*Adv. Mathematics*, *Anglo-Saxon*, *Hebrew.*	*Adv. Mathematics*, *Early English*, *Hebrew.*
B.	General Biology, *History of Art*, *Advanced Logic.*	General Biology, *Archæology.*
C.	Chemistry, *Am. Const. History.*	Histology, *International Law.*

SENIOR YEAR.

REQUIRED.

First Term.		*Second Term.*	
Astronomy,	3	Geology,	3
Ethics,	2	Evidences of Christianity,	1
	5		4 hours.
(Student takes 10 hours Elective work.)			
	15 hours.		14 hours.

To enter for Senior Honors in any department, the student must take 6 hours Elective work in that department, or, taking only 4

F.	Sanskrit, Science of Government, Laboratory Chemistry.	Sanskrit, Municipal Law, Laboratory Chemistry.
G.	Pract. Astronomy, Palæontology, Roman Law, Advanced Hebrew.	Pract. Astronomy, Palæontology, Roman Law, Advanced Hebrew.
H.		Physical Geography, Pedagogics, Greek C. (Tuesday).

HONORS.

I. *General Honors.*

To be granted for general excellence substantially as at present.

II. *Special Honors.*

To be granted in leading general departments.

Special Honors in any department shall be awarded only to students whose general average is above mediocrity. No student will be eligible as a candidate for Special Honors in any department in the Senior year, who has not passed an examination in the Honor courses of the preceding years in the department in which he seeks Special Honors.

(1) *In Freshman year*—(in 4 hour subjects)—in *Latin*, *Greek*, *Mathematics.*

(2) *In Sophomore year* (in 4 hour subjects),

Latin, 4
Greek, 4
Math., 4
French, 4 (The Elective with Required M. L. and English).
German, 4 " " " " " " "

(3) *In Junior Year*,

In any Elective department where 4 hours Elective work can be taken. These are:

(*a*) Mental Philosophy,
(*b*) Pol. Science and History,
(*c*) Classics,
(*d*) Modern Languages,
(*e*) Mathematics,
(*f*) Natural Sciences.

(4) *In Senior Year*,

In any Elective department where 6 hours Elective work can be taken. These are:

(*a*) Mental Science,
(*b*) Pol. Science and History,
(*c*) Archæology and Art,*
(*d*) Ancient Languages,
(*e*) Modern Languages,*
(*f*) English,*
(*g*) Math. & Math. Sciences,
(*h*) Natural Sciences.†

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*To make up the *six* hours Elective work in these departments, they must be combined with some cognate Electives; Archæology and Art with Latin, Greek, or History; Modern Languages with either English or Latin or Greek; English with Modern Languages or Latin or Greek.

†One of the courses taken must be Laboratory Chemistry.

FRESHMAN FIRST TERM SCHEDULE.

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8½		Math. 1 B Math. 3 A	Latin 1 B Greek 3 B	Greek 2 A Greek 4 B	Greek 2 A Greek 4 B	Bible } 1 & 2 Bible } 3 & 4
9½		Math. 2 B Math. 4 A	Latin 2 B Greek 4 B	Greek 1 A Greek 3 B	Greek 1 A Greek 3 B	
10½	Math. 1 B Math. 3 A	English 1 A Latin 3 B	English 1 A English 3 B	Latin 1 A Latin 3 B	Latin 1 B Latin 3 A	Latin 1 B English 3 B
11½	Math. 2 B Math. 4 A	English 2 A Latin 4 B	English 2 A English 4 B	Latin 2 A Latin 4 B	Latin 2 B Latin 4 A	Latin 2 B English 4 B
3	Math. 1 A Math. 3 B	Math. 1 A Math. 3 B	Greek 1 B Latin 3 B	Greek 2 B Greek 4 A	Greek 2 B Greek 4 A	
4	Math. 2 A Math. 4 B Eloc. 1	Math. 2 A Math. 4 B Eloc. 3	Greek 2 B Latin 4 B	Greek 1 B Greek 3 A Eloc. 2	Greek 1 B Greek 3 A Eloc. 4	
5						

Math. A=Algebra.
Math. B=Geometry.
Arabic Numbers=Divisions.

Eng. A=Prof.
Eng. B=Asst.

Latin A. B.
Greek A. B.
} Course under two instructors.

English and Bible must take same divisions as Classics.
Divisions independent in Classics and Mathematics.

FRESHMAN SECOND TERM SCHEDULE.

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8½		Math. 1 B Math. 3 A	Latin 1 A Latin 3 B	Greek 1 A Greek 3 B	Anat. 3 & 4 French 1	Bible 3 & 4 French 2
9½		Math. 2 B Math. 4 A	Latin 2 A Latin 4 B	Greek 2 A Greek 4 B	Anat. 1 & 2 French 3	Bible 1 & 2 French 4
10½	Math. 1 B Math. 3 A	French 1	French 3	Latin 1 A Latin 3 B	Latin 1 B Latin 3 A	Greek 1 B Greek 3 A
11½	Math. 2 B Math. 4 A	French 2	French 4	Latin 2 A Latin 4 B	Latin 2 B Latin 4 A	Greek 2 B Greek 4 A
3	Math. 1 A Math. 3 B	Math. 1 A Math. 3 B	Latin 1 B Latin 3 A	Greek 1 B Greek 3 A	Greek 1 A Greek 3 B	
4	Math. 2 A Math. 4 B	Math. 2 A Math. 4 B	Latin 2 B Latin 4 A	Greek 2 B Greek 4 A	Greek 2 A Greek 4 B	
5						

Divisions independent in Latin, Greek, Mathematics.
Divisions for French must be taken in Anatomy and Bible.

SOPHOMORE FIRST TERM SCHEDULE.

12 hours Required + 2 two-hour ELECTIVES = 16 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½		Latin 1 Greek 3	History 1 & 2	History 1 & 2 French 4	LATIN	8½ Bible 1 & 2 9 Bible 3 & 4
9½	GERMAN	Latin 2 Greek 4	History 3 & 4	History 3 & 4 French 2	MATH.	Chem. 3 & 4
10½	Latin 1 Greek 3	MATH.	Math. 1 & 2	GREEK	GREEK	French 1
11½	Latin 2 Greek 4	GERMAN	Math. 3 & 4	MATH.	Chem. 1 & 4 French 4	Chem. 1 & 2 French 3
3	Latin 3 Greek 1	Latin 3 Greek 1	Math. 1 & 2	French 3	FRENCH	
4	Latin 4 Greek 2	Latin 4 Greek 2	Math. 3 & 4	French 1	Chem. 3 & 4 French 2	
5		MATH.	FRENCH	LATIN		

Divisions in Classics and Math. independent. Other divisions must be same as in French (the Required Mod. Lang.)

SOPHOMORE SECOND TERM SCHEDULE.

12 hours Required + 2 two-hour ELECTIVES = 16 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½		Latin 1 Greek 3	English 1 & 2	English 1 & 2	LATIN	8½ Bible 1 & 2 9 Bible 3 & 4
9½	GERMAN	Latin 2 Greek 4	English 3 & 4	English 3 & 4	MATH.	Zool. & Bot. 3 & 4
10½	Latin 1 Greek 3	MATH.	Math. 1 & 2	GREEK	GREEK	
11½	Latin 2 Greek 4	GERMAN	Math. 3 & 4	MATH.	Logic 1 & 2 Zool. & Bot. 3 & 4	Zool. & Bot. 1 & 2
3	Latin 3 Greek 1	Latin 3 Greek 1	Math. 1 & 2	Logic 1 & 2	FRENCH	
4	Latin 4 Greek 2	Latin 4 Greek 2	Math. 3 & 4	Logic 3 & 4	Logic 3 & 4 Zool. & Bot. 1 & 2	
5		MATH.	FRENCH	LATIN		

Divisions independent in Required Classics (Latin & Greek same), Mathematics, English and Bible.
Divisions in Logic and Zool. & Bot. to be the same.

JUNIOR FIRST TERM SCHEDULE.

8 hours REQUIRED + 3 two-hour electives = 14 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½		PHYSICS	*Hist. Phil.*	*Latin P.*	*Latin P.*	BIBLE
9½	LOGIC & PSYCH.		*Math. F.* / *Anglo-Saxon* / *Hebrew*	*Math. F.* / *Anglo-Saxon* / *Hebrew*	*French*	*French*
10½		*Chemistry*	*Am. Con. Hist.*	*Am. Con. Hist.*	Math. D.	LOGIC & PSYCH.
11½	PHYSICS	ENGLISH	*Greek W.*	*Greek W.*	*Hist. Phil.*	
3			Gen. Biology / *Hist. of Art*	GERMAN	Math. D.	
4	ENGLISH	PHYSICS	German	Gen. Biology / *Hist. of Art*	LOGIC & PSYCH.	
5		*Chemistry*	*History*	*History*		

Electives in *Italics* open to Juniors and Seniors—ordinarily alternating courses.
Electives in Roman open to Juniors only.
Bracketed Electives mutually exclusive.

JUNIOR SECOND TERM SCHEDULE.

8 hours REQUIRED + 3 two-hour Electives = 14 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½		PHYSICS	FRENCH	*Latin W.*	*Latin W.*	BIBLE
9½	POL. ECON.		*Math. F.* *Early English* *Hebrew*	*Math F.* *Early English* *Hebrew*	*Hist. Phil.*	*Hist. Phil.*
10½			Histology *Inter. Law*	Histology *Inter. Law*	Math. D.	POL. ECON.
11½	PHYSICS	ENGLISH	*Greek O.*	*Greek O.*	*French*	
3			Gen. Biology *Archæology*	German	Math. D.	
4	ENGLISH	PHYSICS	German	Gen. Biology *Archæology*	POL. ECON.	
5			*History*	*History*		

Electives in *Italics* open to Juniors and Seniors—ordinarily alternating courses.
Electives in Roman open to Juniors only.
Bracketed Electives mutually exclusive.

SENIOR FIRST TERM.

5 hours REQUIRED + 5 two-hour Electives = 15 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½		F	*Hist. Phil.*	*Latin P.*	*Latin P.*	BIBLE
9½	Greek* (Cm.) ASTRON. A	G	A	A	*French*	*French*
10½	ASTRON. B	H	C	C	F	ETHICS
11½	D	D	*Greek W*	*Greek W*	*Hist. Phil.*	
8	German* ASTRON. A	German* ASTRON. A	B	E	G	
4	ASTRON. B	ASTRON. B	E	B	ETHICS	
5		*Chemistry*	*History*	*History*		

*Recites in Astronomy B.
Electives in *Italics*—open to Juniors and Seniors.
Electives in Roman—open to Seniors only.
Large Capitals (A, B, C, D, E, F, G, H,) indicate groups of mutually exclusive Electives.

SENIOR SECOND TERM SCHEDULE.

4 hours REQUIRED + 5 two-hour Electives = 14 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½		F	*French*	*Latin W.*	*Latin W.*	
9½	Greek* (Cm.) GEOLOGY A	G	A	A	*Hist. Phil.*	*Hist. Phil.*
10½	GEOLOGY B	H	C	C	F	EV. OF CHRIST.
11½	D	D	*Greek O.*	*Greek O.*	*French*	
3	German* GEOLOGY A	German* GEOLOGY A	B	E	G	
4	GEOLOGY B	GEOLOGY B	E	B	H	
5	POL. ECON.	POL. ECON.	*History*	*History*		

*Recites in Geology B.

EXAMINATIONS, STANDING AND GRADUATION.

EXAMINATIONS.

Regular Examinations.—At the end of each term each class is ordinarily examined in the studies of that term. At the close of the second term the examination in certain subjects embraces not only the work of that term, but the course of the entire year.

Partial Examinations and Written Recitations.—In addition to the regular examinations, partial examinations or written recitations are held from time to time during the term.

Divisional Examinations.—In the Freshman class, a special examination is held early in the first term, the results of which determine the distribution of the class into graded divisions. These are reorganized at the beginning of the second term according to the results of the last preceding regular examination.

General Regulations.—Examinations are for the most part conducted in writing, but in certain subjects are oral in whole or in part. Private examinations are not allowed except in extreme cases and by special permission of the Faculty. Absence from an examination, except for reasons of absolute necessity, will be regarded as a serious delinquency, and a subsequent examination will not be granted except by a vote of the Faculty.

Regulations concerning the Removal of Conditions.

Students who shall appear to the Faculty, on examination, to be deficient in their studies, will be dealt with according to the nature and extent of the deficiency. Any member of any one of the three lower classes who shall fail to pass the examinations at the end of any term in more than two departments, involving as much as six hours of schedule time, shall be dropped from his class and

shall be required to enter a lower class or to withdraw from College. If the failure be in not more than two departments, the student may be allowed a second trial at the beginning of the next term; if he fail in this second examination, he shall employ a tutor approved by the Faculty, and be allowed four weeks for further preparation; but if he still fail to pass, he shall be required to enter a lower class or withdraw from College.

In the Freshman class, failure with either instructor in Greek, in Latin, or in Mathematics, is reckoned as a separate failure in the application of the above rules.

The Senior class will be subject to the same regulations as the three lower classes so far as regards the examinations at the close of the first term, and the removal of any conditions then incurred.

In the application of these regulations, special cases, arising from illness or other causes, will be duly considered.

On the second day of each term, Thursday, at 10 o'clock, A. M., all delinquent or unexamined students are required to meet in the Old Chapel to make arrangements with their instructors for examination in the subject in which they are deficient. This does not apply to entering students. In the first term, this examination is to take place immediately at the beginning of the term; in the second term, two weeks are allowed for it. Any student not present as thus directed, or not prepared for examination at the time appointed, will be debarred from another opportunity, except by special vote of the Faculty.

STANDING.

The results of the term examinations are combined with those of the recitations to decide the relative standing or rank of the student. The maximum mark in each study is one hundred; the minimum or passing mark is fifty. Students falling below the passing mark in any study, are conditioned, and in order to continue with the class must be re-examined.

Each instructor, after computing from recitations and examinations the marks of his classes determines each student's rank by assigning him to one of certain groups into which the class is divided. These groups are constituted and numbered in order of

merit—those students whose marks indicate the highest attainments being assigned to the first group, the next highest to the second group, and so on through the groups.

The general rank of a student is determined by combining his group numbers in the several studies in proportion to the allotted schedule time of each. Those students whose averages are highest, and above an established limit, are assigned to the first general group, those next highest to the second general group; and so on through the general groups.

In determining a student's standing, essays count as one hour per week throughout each of the four years. Account is taken of attendance and conduct as well as scholarship, according to the published rules of the Faculty.

A report of the standing of each student is made to his parent or guardian by the Registrar of the College at the close of the first term and at the close of the year. The latter report gives also the standing for the whole year.

GRADUATION.

Bachelor's Degree.

Students who pass their final examination are ordinarily recommended by the Faculty for the degree of Bachelor of Arts, and if the recommendation is approved by the Trustees, the degree is conferred at Commencement, and they receive diplomas signed by the President and the Clerk of the Board of Trustees.

No student will be recommended to the Trustees for a degree who fails to pass the examinations at the close of the last term of the Senior year.

Any member of the Senior class failing to pass the regular final examination in but *one* of his studies may, by vote of the Faculty, be allowed a re-examination, and if successful in passing this, may be recommended to receive his degree with his class.

Any member of the Senior class failing to pass the regular final examination in *two* of his studies may, by vote of the Faculty, be allowed a re-examination, and if successful in this, may be recommended for a degree *at some time in the next Academic year.*

Final Rank and Graduation Honors.

The final rank of members of the graduating class is computed by combining the averages for the several years of the course, except that the average for the Freshman year is omitted in those cases in which it would lower the standing of the student. The Faculty then determines what portion of the class shall be printed as the Honor List—the names of the members of each group being printed in alphabetical order with particular departments indicated in which they have excelled, or taken Special Honors.

The first and second general groups thus determined are the Honor groups of the graduating class, and are designated *magna cum laude* and *cum laude* respectively.

The higher distinction of *insigni cum laude* and the highest of *summa cum laude* are reserved for very unusual excellence.

Commencement Speakers.

The student whose individual rank is highest is ordinarily awarded the Latin Salutatory by vote of the Faculty. In like manner the student whose individual rank is the next highest receives the English Salutatory. The Valedictory is awarded with special regard to the qualifications of the student as a valedictorian, as well as on the ground of scholarship. Five others out of sixteen recommended by the Baird Prize Committee deliver English Orations, usually in the order of their scholarship.

In the award of all degrees and honors, regard is had to the conduct of the student during his course, and any student who has incurred serious discipline may be debarred from the rank to which otherwise his scholarship would have entitled him.

THE JOHN C. GREEN SCHOOL OF SCIENCE.

PROFESSORS.

FRANCIS L. PATTON, PRESIDENT.
JAMES O. MURRAY, DEAN, *English Literature and Language.*
J. STILLWELL SCHANCK, *General Chemistry.*
CYRUS F. BRACKETT, *Physics and Electrical Engineering.*
HENRY B. CORNWALL, *Analytical Chemistry and Mineralogy.*
GEORGE MACLOSKIE, *Botany, Zoology, Biblical Instruction.*
CHARLES McMILLAN, *Civil Engineering.*
CHARLES A. YOUNG, *Astronomy.*
CHARLES G. ROCKWOOD, JR., *Mathematics.*
THEODORE W. HUNT, *Rhetoric, English Language.*
WILLIAM M. SLOANE, *Comparative Politics.*
GEORGE L. RAYMOND, *Oratory and Æsthetic Criticism.*
WILLIAM LIBBEY, JR., *Histology.*
WILLIAM B. SCOTT, *Geology.*
HENRY F. OSBORN, *Comparative Anatomy.*
FREDERICK N. WILLSON, *Descriptive Geometry, Stereotomy, Technical Drawing.*
ALLAN MARQUAND, *History of Art.*
ANDREW F. WEST, *Pedagogics.*
ALEXANDER T. ORMOND, *Psychology.*
HERMANN C. O. HUSS, *French, German.*
WILLIAM F. MAGIE, *Physics.*
H. S. S. SMITH, *Civil Engineering.*
LEROY W. McCAY, *Analytical Chemistry.*
MARION M. MILLER, *English.*
TAYLOR REED, *Practical Astronomy.*
WALTER M. RANKIN, *Biology.*
A. H. PHILLIPS, *Biology.*
SAMUEL THOMSON DODD, *Physics.*
WALTER B. HARRIS, *Civil Engineering.*
RUDOLPH WEBER, *Drawing.*

FOUNDATION AND ORGANIZATION OF THE JOHN C. GREEN SCHOOL OF SCIENCE.

This institution is a department of the College of New Jersey, founded in 1873 upon an endowment by Mr. John C. Green.

Its design is to furnish more extended and special instruction in the natural sciences, providing several scientific courses leading to the degree of Bachelor of Science and also various graduate courses. The course in Civil Engineering was added in 1875, by further endowment from the residuary legatees of Mr. Green.

The course in Electrical Engineering was added in 1889, by the same donors.

The undergraduate courses offer, according to the choice of the student, efficient education in the natural sciences in general, or a thorough training in the study of civil engineering or electrical engineering and in various other branches of science, pure and applied. At the same time a liberal education in certain academic studies is secured to all candidates for a degree.

Graduate courses of study for the degrees of Master of Science and Doctor of Science are provided; and also special courses which, under certain conditions, may be taken by students who are not candidates for any degree.

Instruction is given by lectures and recitations—by practice in the laboratories, drawing-rooms, museums and field—and excursions are made to different points of interest.

Before receiving his degree every student must present to the Faculty an acceptable thesis on some scientific subject, the nature of which will depend upon the course he has pursued.

ADMISSION.

ENTRANCE EXAMINATIONS.

All entering students on their arrival must report at the President's house, and register. The first examination for admission will begin in Princeton, on Thursday, June 12th, 1890, at 11 A. M., and will continue through the afternoon of Friday. The second will begin on Tuesday, September 16th, at 11 A. M., and continue through the afternoon of Wednesday. Applicants who have conditions or other deficiencies from the June examination are expected to remove them at this time. *Attendance is required at the beginning of the examinations.*

Simultaneously with the June entrance examinations in Princeton, examinations are held in the cities of New York, Philadelphia, Pittsburgh, Cincinnati, Louisville, Chicago, St. Louis, Omaha, Denver and San Francisco, and at preparatory schools and other cities when necessary. The precise places in which the examinations are to be held can be learned by application to the President. Due notice of these examinations will also be published in leading local newspapers for several weeks in advance.

Examinations at other times and places than those specified are very inconvenient and often impracticable, and applicants for examination at other than the regular days are required to pay $10 into the treasury.

At the examinations in June, candidates intending to enter the Freshman class one year later are admitted, on request, to examination on a portion of the subjects required for entrance. Applications for such preliminary examination should be made to the President, with a statement of the subjects and amount offered, at least two weeks previous to the examination.

Candidates for admission to the Freshman class must be at least sixteen years of age. They will be examined in the following books and subjects:

ENGLISH: Grammar—Whitney, or equivalent; U. S. History—Johnston or equivalent; Modern English History—Gardiner or equivalent; Essay—the theme for 1890 will be based on the life of Prescott or of Sir Isaac Newton. The attention of preparatory schools is called to the need of a more thorough study of elementary English; also, to the addition of Modern English History to the English entrance requirements. MATHEMATICS: Arithmetic entire, including the Metric system, a practical knowledge of which is indispensable; Algebra, through quadratic equations involving two unknown quantities, including evolution, radicals, theory of exponents; Geometry—plane geometry entire (five books of Wentworth's or Chauvenet's Geometry or their equivalent). PHYSICAL GEOGRAPHY: The elements, as contained in Guyot's Grammar-School Geography.

MODERN LANGUAGES: either FRENCH or GERMAN at the option of the candidate. In either language the examination will be upon the general principles of grammar [French, Otto, pp. 28–201, or Whitney, pp. 27–202; German, Whitney, pp. 23–153 and 278–284; or Brandt, pp. 6–154; or Otto, Part I.; or Joynes-Meissner, pp. 19–177; or Huss, pp. 9-101 of the Theoretical Part,] and the ability to translate easy prose, such as, in French, the first fifty pages of *Lamartine's* Graziella, or of *G. Sand's* La Mare au Diable, or *Erckmann-Chatrian's* Le Conscrit, or *Lacombe's* Petite Histoire du Peuple Français; or in German, either *Storm's* Immensee, or *Grimm's* Märchen (Otis' edition, pp. 61–109), or *Boisen's* German Prose (pp. 3–51).

Candidates for the degree of Bachelor of Science will be examined (in addition to the subjects above enumerated) in LATIN: Grammar, with special attention to parsing, and the retranslation from English into Latin of simple sentences from the First Book of Cæsar; Translation, Cæsar (five books of the Gallic War), Cicero (the four orations against Catiline), or equivalents from other Latin authors.

It is recommended that all candidates should receive instruction in free-hand drawing before their entrance.

OTHER REQUIREMENTS.

Candidates for admission to an advanced class will be examined in the studies previously pursued by the class they propose to enter.

All candidates for admission must bring satisfactory testimonials of good moral character and attainments, preferably from their last instructors, and if the candidate has been a member of another college, university, or similar institution, he must produce a certificate from its President or Faculty that he is free from censure in the same.

No candidate is admitted without an examination and a vote of the Faculty.

Immediately after the opening of the College the entering students meet according to announcement for the registration of their names and subscription to the following pledge, required by the Board of Trustees.

We, the undersigned, do individually for ourselves promise, without any mental reservation, that we will have no connection whatever with any secret society, nor be present at the meetings of any secret society in this or any other college so long as we are members of the College of New Jersey; it being understood that this promise has no reference to the American Whig and Cliosophic Societies. We also declare that we regard ourselves bound to keep this promise and on no account whatever to violate it.

UNDERGRADUATE COURSES.

Undergraduate courses are provided for the degrees of Bachelor of Science, of Civil Engineer and of Electrical Engineer.

All candidates for the degree of Bachelor of Science pursue the same studies until the end of the first term of the Junior year, after which they pursue one of the following three Elective Courses: General Science; Chemistry; Biology and Chemistry.

The student must announce his election before the end of the first term of the Junior year. He cannot afterwards change his course without the permission of the Faculty.

Candidates for the degree of Civil Engineer pursue some studies in common with candidates for the degree of Bachelor of Science, but the divergence of the two courses commences at the very beginning.

Special Students.—For persons who may desire to devote special attention to any of the scientific studies of the School, arrangements may be made with the Professors of those branches, if the Professor in charge shall, after due investigation, decide that the applicants can pursue such studies with advantage. Every facility will be offered for their advancement in the studies selected, with the personal supervision of the Professor and full access to the collections, etc.; but it must be distinctly understood that this opportunity is intended only for those who desire to obtain proficiency in special branches, and not for students who have failed to keep up with the regular classes. Special students will be required to give evidence of satisfactory progress in their studies. To those passing successful examinations in the branches selected, certificates of proficiency will be given. The branches open to special students include geology, mineralogy, biology, physics, practical astronomy, analytical and applied chemistry, assaying, topography.

Optional Courses.—The optional courses which are offered to the students of the Academic department (p. 24) are also open to those students of the School of Science who may be fitted to pursue them with profit.

COURSES FOR THE DEGREE OF BACHELOR OF SCIENCE.

STUDIES IN COMMON.

Modern Languages.

PROFESSOR HUSS.

Instruction in Modern Languages comprises German and French as required studies throughout the entire course, the number of exercises being given in the synopsis on a later page.

In the Freshman year the etymological part of grammar is taught. The instruction is, at the very outset, conducted with a view to familiarizing the student not only with reading and writing, but also with speaking the foreign idiom; for which latter purpose conversational exercises are constantly resorted to and especial attention is given to pronunciation.

In the Sophomore year the instruction bears on syntax, with oral and written exercises in French and German prose, particular attention being given to the intricacies of the German period.

The Junior year and the first term of the Senior year are devoted to a critical study of the masterpieces of German and French literature, with lectures thereon.

Mathematics.

PROFESSOR ROCKWOOD.

The Mathematical course, which is the same for all students of the School of Science, is intended to be so framed as to supply the necessary foundation in knowledge and training for the later studies of physics and mechanics, and especially finds its natural continuation in the applied mathematics of the course in Civil Engineering. The fact that the student's mathematical knowledge is thus to be used in other departments is carefully kept in view, not only in selecting the subjects to be studied, but in arranging their order and the relative time to be devoted to each, so that he may be properly prepared for the work before him. Constant black-board practice is a prominent feature of the instruction, and gives the

student a practical as well as a theoretical familiarity with the processes, preparing him for their ready use afterward in the special investigations of his later studies.

The student is required, at the entrance examination, to be acquainted with arithmetic, including the Metric system; algebra through quadratic equations, including radicals and the theory of exponents; and with the principles of plane geometry as developed in the first five books of Wentworth's or Chauvenet's Geometry.

During the whole of the first year the student devotes five hours a week to mathematics. In the first term he finishes the study of algebra (Wells'), discussing the various forms of series, the subject of logarithms and the theory of equations.

At the same time, and extending into the second term, solid geometry and spherical geometry are studied, the text-book being Wentworth's new treatise, and the subject being illustrated by a numerous and valuable collection of models, mostly from original designs. With the geometry is combined a thorough course in mensuration with the use of logarithms. The remainder of the second term is devoted to plane and spherical trigonometry. The second term of the Sophomore year with five exercises a week is devoted to the study of analytical geometry (Bowser), both of the plane and of space, with special reference to the conic sections, and the differential calculus is begun. In the first term of the Junior year the differential and integral calculus (Bowser) are studied, with four exercises a week. Throughout the whole course, the blackboard drill is combined with abundant oral explanation and occasional formal lectures.

The calculus ends the course in the pure mathematics required of all students. They pass then to the applications of their work in the special departments of engineering, physics, astronomy, etc.

Graphics.

PROFESSOR WILLSON AND MR. WEBER.

RECENT CHANGES IN THE COURSES IN GRAPHICS.—To enable those members of the B. S. division who so desire, to specialize in chemical and biological work to a greater degree than was possible by the former schedule, and also to give them a more ex-

tensive course in the kind of drawing likely to be most serviceable in their professional work, the following radical changes have been made in their courses in Graphics:—(a) the time allotted to free-hand drawing has been increased from twenty two-hour exercises to forty-eight three-hour exercises; (b) with the exception of the mechanical drawing of Freshman year, taken in common with the C. E. students, no other courses in Graphics are *required*, descriptive geometry, shadows and perspective having been, however, made *electives* in the Senior year, with stereotomy, to those B. S. students who take the *General Science* course.

FREE-HAND DRAWING.—This course, given by Mr. Weber, occupies, as above stated, forty-eight exercises, divided between the first and second years of the course. The drawings are, from the outset, made from the object and not from the flat. The models are either from the collections in the Museum of Natural History or specimens of the same nature readily obtainable by the student during his rambles. The aim of the course is to thoroughly familiarize the student with the usual methods of free-hand representation employed in scientific work—pencil, pen and ink, and water colors, and to advance him to a high degree of proficiency therein.

MECHANICAL DRAWING.—During the first term of Freshman year a course of fifty-six exercises in practical geometrical and engineering drawing is given, beginning with instruction in the use of drafting instruments and materials, and including tinting and shading, both with pen and brush, lettering, and the representation of metals, wood, masonry, earth, tiles and the other materials of architectural and engineering construction. Architectural drawings and tracings are then made, to scale, from measurements, also "working drawings" of details of machinery, bridges, etc., from free-hand sketches taken by the students. The course further includes the solution of the more important plane problems involving only the straight line and the circle; the tracing of point paths in link motions; the graphic construction of the conic sections and of various trochoidal and other higher plane curves, in connection with which their most interesting geometrical properties are examined; the solution of problems in orthographic projection (first angle); axonometric (including isometric) projection, with applications in

crystallography, in drawing from architectural and other models, and also from data derived from working drawings.

In conducting the above course much of the instruction is given orally, but in connection with portions of the work the following books are used: Warren's Elementary Projection Drawing, Warren's Drafting Instruments and Operations, and either Prang's, Copley's or Ames' Alphabets. The Civil Engineering students take the course just outlined and also additional work in Graphics in the Freshman, Sophomore and Senior Years, regarding which see the course in Civil Engineering.

DRAFTING ROOM AND MODELS.—The recitation and drafting room of the department of Graphics is well lighted and furnished with model cases and with desks for the accomodation of ninety-two students. The drawing courses in descriptive geometry, shades and shadows, architectural constructions (including stone-cutting), kinematics, and machinery, are illustrated by a large collection of models, which includes a number of duplicates of the Olivier ruled-surface models, two hundred of the Schröder (Darmstadt) manufacture, complete sets of the mathematical models designed by Professors Brill and Björing, a number of the "Muret" plaster models, and several warped-surface models from designs by the professor.

Surveying.

PROFESSOR SMITH.

This course, occupying sixteen exercises in the first term of the Sophomore year, is designed to teach the student the outlines, principles and applications of the different subdivisions of geodesy, and to familiarize him, in a general way, with surveying practice. Field exercises are intermingled with the recitations, and the subject is thus rendered more intelligible and attractive.

General Chemistry.

PROFESSOR SCHANCK.

A fully illustrated course of instruction in General Chemistry occupies two hours a week during the entire Freshman year.

Analytical Chemistry and Mineralogy.

PROFESSORS CORNWALL AND MCCAY.

MINERALOGY. — During the whole of the first term of the Sophomore year all candidates for the degree of B. S. or C. E. are taught determinative mineralogy with the blowpipe, preceded by a short course in crystallography, embracing the simple forms of each crystal system and their commonest combinations. All the students are likewise taught to recognize by their physical characters the commoner ores and the commoner minerals having a technical importance, such as quartz, feldspars, barite, calcite, fluorite, gypsum, etc.

Candidates for the degree of B. S. during the same term have also a course in general descriptive mineralogy, occupying two exercises a week.

Text-books.—Cornwall's Manual of Blowpipe Analysis; J. D. Dana's Manual of Mineralogy and Lithology.

ANALYTICAL CHEMISTRY.—During the second term of the Sophomore year, the students attend lectures by Professor Cornwall, with recitations, and also work in the laboratory, under Professor McCay, pursuing the study of qualitative chemical analysis, with Fresenius' Manual as a guide. Five exercises in each week are given to the study of the detection of bases, together with instruction in the tests for the common acids, inorganic and organic. The subjects given during the Junior and Senior years are indicated in the Synopsis of Studies on a later page.

Botany.

PROFESSOR MACLOSKIE AND DR. RANKIN.

Botany is a required study during part of the second term of the Freshman year and the beginning of the Sophomore year, and occupies seventy-two exercises (two hours each). The work of the class is exclusively practical, and includes the examination of plants as to their morphology, histology, modes of development, and physiology. Students are taught to use their hands and eyes, to avail themselves of microscopical appliances and methods of staining, to master the characters of the larger orders of plants, and are exercised

in phytography by describing and drawing what they see. The text-books and manuals are used for reference, but each student is expected to prepare his own text-book by original work on typical plants, and noting down the results. The neighborhood of Princeton is a favorable ground for botanical excursions, and an original thesis on some part of the work is required of every student.

Books used: Macloskie's Elementary Botany; Gray's Manual of Botany; Bessey's Briefer Course Botany; Arthur, Barnes and Coulter's Plant-dissection; Strassburger's Botanisches Prakticum; Sachs' Text-Book of Botany; H. Müller's Fertilization of Flowers; Le Maout and Decaisne's Botany; Bentham and Hooker's Genera Plantarum; De Candolle's Prodromus; and the Monographs on special groups of flowering and flowerless plants.

Biology.

PROFESSORS MACLOSKIE, LIBBEY AND OSBORN, DR. RANKIN, AND MR. PHILLIPS.

During the second term of Freshman year the students for the degree of B. S. attend, along with the Academic class, Professor Schanck's course in Human Anatomy and Physiology, one exercise per week. In the first term of Sophomore year Professor Macloskie and Dr. Rankin give an elementary course in zoology, thirty-two exercises of two hours each. This course includes lectures, with demonstrations and simple exercises on the most important types of animal structure. In the second term of Sophomore year Professor Libbey gives a course in general histology, and in the second term of Junior year a course in practical and advanced histology. In the first term of Junior year Professor Osborn and Mr. Phillips conduct a course of recitations and practical exercises in general biology and the dissection of the lower vertebrate types, beginning with *Amphioxus*. The text-books used are Gibson's Biology, and Packard's Zoology.

These required courses are intended to give all candidates for the degree of B. S. a practical knowledge of the outlines of zoology, and to serve as an introduction to the elective courses in biology and chemistry of the Junior and Senior years.

Studies Pursued in Common with the Academic Classes.

The following studies are pursued either together with the Academic classes, or essentially as stated under the corresponding titles in the Academic course, and under the same instructors.

Psychology; political economy; English literature, the essays and orations required from the Senior class in the Academic course being replaced in the Scientific course by the preparation and reading of theses on scientific subjects; rhetoric and English language; oratory; physics; astronomy; geology; human anatomy and physiology.

COURSE IN GENERAL SCIENCE.

This is one of the three courses leading to the degree of Bachelor of Science, and is intended to afford instruction in science without specializing in any one department. The students electing it enter upon the special studies of the course at the beginning of the second term of their Junior year. Beside the studies required of all candidates for the degree of Bachelor of Science the following studies are pursued during the Junior and Senior years:

ANALYTICAL MECHANICS.—This is taken with the class in the course in Civil Engineering, and occupies five exercises a week through the second term of the Junior year.

PHYSICAL GEOGRAPHY.—This consists of two exercises a week in the second term of the Senior year, and is taken with the Senior class of the Academic department (p. 48).

In the Senior year the student is allowed liberty of choice from the following studies, the condition being that the studies chosen shall occupy nine or ten exercises a week during the first term of the year, and ten exercises a week during the second term.

ANALYTICAL CHEMISTRY.—This includes the applications of chemistry to medicine and hygiene, including toxicology, analysis of potable waters, adulterations of food, disinfectants. Lectures and recitations, two exercises a week during the first term.

PRACTICAL ASTRONOMY.—This is the same as the Senior elective in the Academic department (p. 48), and occupies two exercises a week throughout the year.

PRACTICAL PHYSICS.—This is essentially the same as the elective course in the Senior year of the Academic department (p. 46), but is more extended, occupying two exercises a week throughout the Senior year.

THEORETICAL PHYSICS.—This occupies two exercises a week throughout the year.

STRENGTH OF MATERIALS.—This is taken with the Senior class in the course in Civil Engineering, and occupies two exercises a week during the first term.

STEREOTOMY.—This is taken with the Senior class in the course in Civil Engineering, and occupies two exercises a week through the second term.

DESCRIPTIVE GEOMETRY.—This is taken with the Sophomore class in the course in Civil Engineering, and occupies three exercises a week during the first term.

SHADES AND PERSPECTIVE.—This is taken with the Sophomore class in the course in Civil Engineering, and occupies two exercises a week during the second term.

PHYSIOLOGICAL PSYCHOLOGY.—This is the same as the Senior elective in the Academic department (p. 26), and occupies two exercises a week during the first term.

BIOLOGY.—This consists of advanced laboratory work with Professor Macloskie and Professor Osborn, and occupies two exercises a week through the second term.

INTERNATIONAL AND CONSTITUTIONAL LAW.—This is the same as the Senior elective in the Academic department (p. 29), and occupies two exercises a week through the second term.

COMPARATIVE POLITICS.—This is the same as the Senior elective in the Academic department (p. 29), and occupies two exercises a week during the first term.

HISTORY OF ART.—This is the same as the Junior elective in the Academic department (p. 30), and occupies two exercises a week throughout the year.

PEDAGOGICS.—This is the same as the Senior elective in the Academic department (p. 30), and occupies two exercises a week during the second term.

COURSE IN CHEMISTRY.

This course is designed to afford thorough instruction in analytical and technical chemistry, and students electing it enter upon the special studies of the course at the beginning of the second term of their Junior year. Beside the studies required of all candidates for the degree of Bachelor of Science, the following special studies are taken during the Junior and Senior years:

QUALITATIVE ANALYSIS.—This subject, previously pursued in the Sophomore year, is continued, so as to include the detection of inorganic and organic acids as well as bases, in complex substances.

QUANTITATIVE ANALYSIS.—A full course, including the analysis of chemical and metallurgical products, ores, fertilizers, sugar, water, etc. Volumetric methods are freely used whenever they are appropriate.

ASSAYING.—Furnace assay of ores; Bullion assays.

TECHNICAL CHEMISTRY AND APPLICATIONS OF CHEMISTRY to medicine and hygiene, including toxicology, analysis of potable waters, adulterations of food, disinfectants. Lectures and recitations.

In the above subjects the instruction embraces lectures by Professor Cornwall, with recitations upon the lectures and upon portions of the manuals mentioned below, and also laboratory practice (except in technical chemistry) under Professors Cornwall and McCay; the latter lecturing also upon volumetric analysis. All chemical reactions are fully explained by the use of chemical formulas, and the student must show that he understands the theory of all the operations he performs or describes.

The graduation thesis presented by the student must embody the result of the student's own work in the laboratory, whether it be experimental or analytical.

Text-books.—Fresenius' Manuals of Qualitative and Quantitative Chemical Analysis; Ricketts' Notes on Assaying. Reference is frequently made to other works and to scientific periodicals.

COURSE IN BIOLOGY AND CHEMISTRY.

This course* is recommended to students who intend afterwards to pursue the study of medicine. The special studies of the course begin with the second term of the Junior year, half of the time devoted to such studies being allotted to biology and half to chemistry. For the present year the division is made as follows:

I. BIOLOGY.—In this branch Professor Macloskie and Dr. Rankin give a series of exercises on the anatomy of type forms of invertebrate animals, on comparative physiology, and on the morphology and embryology of plants. The text-books recommended are: Packard's Zoology, Martin's Human Body, Foster's Text-book of Physiology, Brooks' Handbook of Invertebrate Zoology, Marshall and Hurst's Practical Zoology, Flower's Osteology, Huxley on the Crayfish, Haddon's Embryology, Leidy's Freshwater Rhizopods, Macloskie's Elementary Botany, Bessey's Botany, Sachs' Botany.

The course in vertebrate morphology and embryology is conducted by Professor Osborn and Mr. Phillips. The required study of the first term is continued in the second term of Junior year by lectures upon the brain, heart and other vertebrate organs, with a practical course of dissection of the frog and cod; also an introduction to the embryology of the chick, with the study of microscopic methods. The Senior course is designed as an introduction to human anatomy, and embraces a thorough study of comparative anatomy and dissection of the cat and rabbit. In the latter half of the year there is an advanced course in embryology. The text-books used are: Parker's Zootomy, Wiedersheim's Comparative Anatomy, and Haddon's Embryology.

*This course is accepted by the College of Physicians and Surgeons in New York in place of six months' study with a preceptor, in case of a student who afterward attends three sessions at that college.

During the second term Professor Libbey conducts one exercise a week in histological methods, in which the class are required to work practically upon subjects assigned, and to present theses upon the results obtained.

II. CHEMISTRY.—This part of the course will embrace classroom exercises under Professor Cornwall and laboratory work under his supervision, with the aid of Professor McCay. After learning how to make quantitative analyses of a number of simple and complex inorganic substances, by the use of gravimetric and volumetric methods, the students will study the properties of the various typical organic compounds, such as alcohols, carbo-hydrates, acids, etc., as well as of fats, urea, milk and other bodies of interest to the student of physiological chemistry, and will be trained in the methods of analyzing and estimating the same, reference being made to appropriate manuals and current scientific literature. Lectures will also be given upon the applications of chemistry to medicine and hygiene, including toxicology, analysis of potable waters, adulterations of food, disinfectants, and similar subjects.

SYNOPSIS OF COURSES.

The studies of the courses leading to the degree of Bachelor of Science are indicated in the following synopsis, the bracketed figures denoting the number of exercises in each subject.

FRESHMAN YEAR.

First Term.

MATHEMATICS: Algebra completed (Wells'); Solid Geometry (Wentworth); [80]. ENGLISH: Elementary Discourse; Hunt's Discourse (Part I.); Trench (Study of Words); Essays; [32]. MODERN LANGUAGES: German: Huss' Conversation in German on a Grammatical Basis; French: Edgren's French Grammar; [48]. GENERAL CHEMISTRY: Inorganic; [32]. DRAWING: Mechanical [56] and Free-hand [8]. ORATORY: Lectures and Drill in Elocution.

Second Term.

MATHEMATICS: Spherical Geometry (Wentworth); Mensuration; Plane and Spherical Trigonometry; [80]. MODERN LAN-

GUAGES: as in the first term; [64]. GENERAL CHEMISTRY: Inorganic [32]. BOTANY: Flowering Plants; Morphology of Plants (Macloskie's Botany); [40]. HUMAN ANATOMY AND PHYSIOLOGY; [16]. DRAWING: Free-hand; [24]. ENGLISH: Essays.

SOPHOMORE YEAR.

First Term.

MINERALOGY: Crystallography and Determinative Mineralogy; [64]: Descriptive Mineralogy; [32]. GERMAN: Syntax; FRENCH: Syntax. Oral and written exercises and translation of German and French Prose; [64]. SURVEYING: [16]. BOTANY: Flowerless Plants; Herborizing; Vegetable Histology (Macloskie's Botany; Bessey's Botany, Briefer Course; Gray's Manual of Botany); [32]. ZOOLOGY; [32]. DRAWING: Free-hand; [16]. ENGLISH: Essays.

Second Term.

MATHEMATICS: Analytical Geometry of the plane and of space, (Bowser); [80]. ANALYTICAL CHEMISTRY: Qualitative Analysis; [80]. HISTOLOGY; [16]. ENGLISH: Hunt's Discourse (Part II); ENGLISH LANGUAGE: Lounsbury's English Language pp. 1–147, or Trench's Select Glossary; Marsh's Origin and History of English Language; Essays; [32]. GERMAN: Syntax Completed; FRENCH: Syntax Completed; [48]. ORATORY: Elocution, Declamation, Written Orations.

JUNIOR YEAR.

First Term.

MATHEMATICS: Differential and Integral Calculus (Bowser); [64]. PHYSICS: Elementary Mechanics; Properties of Bodies; Mechanics of Fluids; Heat; [64]. ENGLISH LITERATURE: Chaucer; Lectures; [32]. MODERN LANGUAGES: German: Lessing, Schiller, Goethe; French: Racine, Corneille, Molière; Lectures on the History of the German and French Literatures: [48]. PSYCHOLOGY; [32]. MORPHOLOGY; [16].

Second Term.

All Courses.—PHYSICS: Electricity and Magnetism; Acoustics; Optics; [48]. ENGLISH LITERATURE: Lectures; [32].

MODERN LANGUAGES: As in the first term; [32]. JURISPRUDENCE AND POLITICAL ECONOMY; [48]. ORATORY: Composition and Delivery, Reading.

Course in General Science.—MECHANICS: Analytical Mechanics of Solids and Fluids; [80].

Course in Chemistry.—ANALYTICAL CHEMISTRY: Quantitative Analysis; [96].

Course in Biology and Chemistry.—ANALYTICAL CHEMISTRY; Quantitative Analysis; [32]. BIOLOGY: Vertebrates; [32]. MORPHOLOGY; [16]. HISTOLOGY; [16].

SENIOR YEAR.

First Term.

All Courses.—ASTRONOMY: General; [48]. MODERN LANGUAGES: German: Goethe's Faust, Scientific Prose; French: Lamartine, Musset, Hugo; Reading scientific prose at sight; [48].

Course in General Science.—Electives: [144 or 160]. PRACTICAL PHYSICS; [32]. THEORETICAL PHYSICS; [32]. PRACTICAL ASTRONOMY; [32]. STRENGTH OF MATERIALS; [32]. ANALYTICAL CHEMISTRY: Quantitative Analysis; [32]. PHYSIOLOGICAL PSYCHOLOGY; [32]. DESCRIPTIVE GEOMETRY; [48]. COMPARATIVE POLITICS; [32]. HISTORY OF ART; [32].

Course in Chemistry.—ANALYTICAL CHEMISTRY: Quantitative Analysis; [160].

Course in Biology and Chemistry.—ANALYTICAL CHEMISTRY: Quantitative Analysis; [32]. PHYSIOLOGICAL PSYCHOLOGY; [32]. BIOLOGY; [32]. PALÆONTOLOGY; [32]. MORPHOLOGY; [32].

Second Term.

All Courses.—GEOLOGY; [42].

Course in General Science.—Required.—PHYSICAL GEOGRAPHY; [28]. *Elective* [126 or 140].—PRACTICAL PHYSICS; [28]. THEORETICAL PHYSICS; [28]. PRACTICAL ASTRONOMY; [28]. STEREOTOMY; [28]. SHADES, SHADOWS AND PERSPECTIVE;

[28]. BIOLOGY; [28]. INTERNATIONAL LAW; [28]. HISTORY OF ART; [28]. PEDAGOGICS; [28].

Course in Chemistry.—ANALYTICAL CHEMISTRY; [182].

Course in Biology and Chemistry.—BIOLOGY; [28]. PALÆONTOLOGY; [28]. MORPHOLOGY; [70]. HISTOLOGY; [56].

COURSE IN CIVIL ENGINEERING.

This course is designed to fit its graduates for entering the profession of civil engineering. It also provides for the instruction in any of its specialties of the graduates of this College and others who may be found suitably prepared. The course diverges from that in General Science at the beginning, but not to such an extent as to make it difficult to change, if desirable, from one course to the other before the opening of the Sophomore year.

The requirements for entrance to the Freshman Class are the same as in the course for the degree of Bachelor of Science, except that no examination in Latin is required. The regular course of study occupies four years, and the degree conferred on graduates is that of Civil Engineer (C. E.).

STATEMENT OF STUDIES.

Studies Pursued in Common with the Candidates for B. S.

The instruction in these studies is the same as stated on p. 78, *et seq.*, and under the same instructors. Modern languages (of the Freshman and Sophomore years); English literature; rhetoric; oratory; psychology; mathematics; mechanical drawing; general astronomy; general chemistry; determinative mineralogy; (of the Sophomore year).

Technical Studies.

The instruction in these studies is given by Professors McMillan, Brackett, Young, Rockwood, Willson, Magie, Smith, Mr. Reed, and Mr. Harris.

In many of the technical studies of the course in Civil Engineering the instruction presupposes a thorough preliminary training of the student in mathematics. A thorough mastery of the ordinary divisions of this science is, therefore, indispensable to the successful study of such subjects as mechanics, physics, etc., which follow it.

Great stress is also laid in this course on the study of graphics as a science, both in its general development and in its application to the practice of designers and builders.

RATIONAL AND APPLIED MECHANICS and the THEORY OF MACHINES.—The instruction in these subjects covers a wide field of study, beginning with the general discussion of motions and the action of forces, and ending with the deduction of practical formulas relating to the strength or stability of different structures, the power, efficiency and strength of hydraulic, steam and air motors, and to the various problems which arise in the practice of hydraulic engineers.

In dealing with these subjects, rigidly mathematical treatment is generally used, and higher analysis is freely employed wherever it is expedient; yet proper weight is given to methods of graphic analysis, and the student's attention is especially directed to those problems in which they can be employed with marked advantage.

EXPERIMENTAL MECHANICS.—The instruction in this study consists mainly of laboratory work. Its purpose is to familiarize the student with the physical properties of building materials; to teach him by actual experiment how to conduct tests and to deduce therefrom coefficients of strength, elasticity, etc.; how to determine coefficients of hydraulic flow and resistance: and how to gauge, by the aid of indicators and dynamometers, the power of steam and other motors. Under this head come also problems in the erection of structures.

AN ENGINEERING LABORATORY has been provided for this work. It contains the following experimental apparatus:—A torsional testing machine; a wire and cement tester; various kinds of current meters and water gauges; a Worthington water meter; a contrivance for determining the hydraulic slopes within earthen retaining banks; a flushing tank; a reaction wheel and other minor pieces of hydraulic apparatus; a double acting steam pump; a loco-

motive link and valve motion and a ten horse-power compound engine with condenser, indicators, gauges and a Prony brake.

The illustrative apparatus of the laboratory comprises rail sections and joints; specimens of the products of iron and steel mills and other building materials; a Sturtevant blower; models of water-wheels, of trestles and of the details of iron bridge and roof joints, of vaults and arches, and a 25-foot iron model of a single track railroad bridge, with a complete outfit of false-works and other appliances for its erection, designed especially for this College.

THE PLANNING AND CONSTRUCTION OF ENGINEERING WORKS.—This is treated in a course of lectures following the study of applied and experimental mechanics. The topics which receive special attention are given in the list of subjects under the heading "Constructions."

Great stress is laid on the application of correct principles and formulas; on the careful inspection, manipulation and preservation of materials, and on the economic features of various designs and the modes of executing them.

A large collection of lantern slides has been provided for illustrating this course. Among the more important photographic studies are a large number of views in detail of the East River suspension bridge at different stages of its progress.

An important feature of this part of the course consists of excursions for the examination of rolling mills, bridge works, machine shops, water works, etc. In these visits the class is accompanied by either the Professor or Assistant Professor of the department, and every member is required to make full notes of his observations and of the instruction received during the trip.

PRACTICAL PHYSICS.—In view of the great importance of the problems of terrestrial magnetism in geodetic surveys, and also in view of the present and increasing demands upon engineers, arising from the application of electricity as a means of illumination and of transmitting energy, provision has been made for the suitable instruction of the student in these subjects, and all candidates for the degree are required to attain a high standard in them.

GEODESY.—The study of engineering field work is provided for in the different subdivisions of the course in Geodesy. The structure, adjustment and use of each instrument are made subjects of special attention, and no student is allowed to participate in any extended field operation until he has acquired a certain dexterity in handling the instruments used therein. The instruction in field work, beginning with the measurement of lines and angles, extends through different kinds of surveys in the order of their complexity and ends with problems in higher geodesy.

A special feature of the course is the stress laid on the collection and verification of field notes by each student, and on their proper use in the preparation of different kinds of plans, maps and charts of surveys. No error is allowed, in field work or in plotting, which is not within the limits observed in current practice.

Under this head is given special instruction in hypsometry, the subject being presented by means of lectures and numerous demonstrations in the lecture room and the field.

A very full collection of instruments has been provided for the course in Geodesy. It represents the work of twelve different firms of high repute; great care having been used to avoid the duplication of instruments by the same makers.

The collection consists of a twelve-inch geodetic transit, a large plane-table with telescopic alidade and a telemeter; engineers', mining and solar transits; wye and dumpy levels; surveyor's compasses; mercurial and aneroid barometers; sextants, heliotropes; various forms of linear measures, and a large assortment of reconnoitering instruments.

PRACTICAL ASTRONOMY.—This is taught in connection with the course in Geodesy, and the students become familiar with the most approved methods of determining time, latitude and longitude, and the true meridian, as well as with astronomical operations in general.

GEOLOGY.—This course will occupy two hours a week during the second term of the Junior year, and will be given in connection with the geological course of the Academic department.

The text-book employed will be Geikie's Manual of Geology.

TOPOGRAPHICAL DRAWING.—The object of this course is to make the student expert in the execution, in pen work and colors, of finished plans and maps of various kinds of surveys. Except in the necessary preliminary drill, the drawings invariably represent actual surveys made by the different classes. A rigid adherence to the field notes of each survey and a high degree of finish are required in the execution of these drawings.

GRAPHICS.—The instruction in graphics includes the following branches:

Mechanical Drawing, as outlined in B. S. course on page 79.

Free-Hand Drawing. A short practical course at the beginning of the Freshman year, preparatory to the taking of sketches and measurements of railroad bridges or of machinery from which to make working and finished drawings later in the course.

Descriptive Geometry and Shades and Shadows. A course of forty-eight exercises (two hours each) in the first term of Sophomore year, on the elementary problems of the point, line and plane in the four angles; on developable, double-curved and warped surfaces; trihedrals; the projection of shadows, etc. Text-book: Warren's Descriptive Geometry.

Perspective and Spherical Projections. Two exercises per week (two hours each) in the second term of Sophomore year. In the course in perspective the methods employed in the present practice of the best American architects are studied and applied. Text-books: Warren's Descriptive Geometry; Wright's Architectural Perspective. Reference work: Ware's Modern Perspective. In spherical projections, descriptive geometry is applied in the more important methods of map projection, as the stereographic, Mercator's, polyconic, etc. Text-book: Warren. Reference works: Craig's Projections; Germain's Spherical Projection.

Structure Drawing. Drawings in plan and elevation, with sections and details, of railroad bridges or similar constructions of approved modern type, to scale, from sketches and measurements taken by the students (Freshman and Sophomore years).

Mechanism and Machine Drawing. A course of lectures, recitations and practical exercises on the kinematics of machinery, with

graphical representation of mechanical movements; theory of link and valve motion; screw propulsion; gearing, including the theory and use of Willis's and Robinson's odontographs; working and finished drawings of machinery, etc. Two exercises a week in the first term of Senior year.

Text-books and reference works:

Weisbach..*Kinematics and Machinery of Transmission.*
Reuleaux...*Kinematics of Machinery.*
MacCord....*Kinematics or Mechanical Movements.*
Auchincloss...*Link and Valve Motion.*
Stahl and Woods..*Elementary Mechanism.*
Seaton..*Manual of Marine Engineering.*
Unwin.....*Machine Design.*
Goodeve.....*Elements of Mechanism.*
Forney.....*Catechism of Locomotive.*
Zeuner.....*Treatise on Valve Gears.*
Sennett.....*Marine Steam Engine.*
Ripper.....*Machine Drawing.*

Stereotomy. A course on the application of descriptive geometry to stone-cutting, practically applied by the student in cutting a voussoir of plaster to a given shape by means of templets, patterns, etc., derived from his own drawings. Text-book, Warren's Stone-Cutting. This course occupies two exercises a week in the second term of Senior year.

THESIS.—Every candidate for the degree of Civil Engineer is required to prepare and submit to the approval of the Professor of Civil Engineering, a design for, or a review of, some special machine, structure or process, as a graduation thesis.

SYNOPSIS OF COURSE.

FRESHMAN YEAR.

First Term.

MATHEMATICS, ENGLISH, MODERN LANGUAGES, GENERAL CHEMISTRY, MECHANICAL DRAWING, and ORATORY, as in the Bachelor of Science course.

Second Term.

MATHEMATICS, MODERN LANGUAGES, GENERAL CHEMISTRY, and ENGLISH, as in the Bachelor of Science course. GEODESY: *The Measurement of Lines;* with common chains and tapes; with city surveyors' chains, tapes and rods; chain surveys and computations of areas. *The Measurement of Angles;* with different kinds

of compasses; chain and compass surveying, including the simpler methods of determining the true meridian and magnetic declination. Theory and practice; [56]. STRUCTURE DRAWING; [24].

SOPHOMORE YEAR.

First Term.

MODERN LANGUAGES, ENGLISH, CRYSTALLOGRAPHY and DETERMINATIVE MINERALOGY, as in the Bachelor of Science course. DESCRIPTIVE GEOMETRY and SHADES AND SHADOWS; [48]. TOPOGRAPHICAL DRAWING: Drawings representing the conventional symbols separately and in combination; Lettering; The platting of maps; Map of the farm survey; Colored topography; [80].

Second Term.

MATHEMATICS, ENGLISH, MODERN LANGUAGES and ORATORY as in the Bachelor of Science course. PERSPECTIVE AND SPHERICAL PROJECTIONS; [82]. STEREOTOMY; Structure drawing; [16]. GEODESY; Problems in the partition of lands; Surveys of public lands; Structure and adjustment of engineers' field instruments; The measurement of angles with transits and theodolites; The computation of lines and angles from the field notes of triangulations; Levelling for bench marks, profiles and cross sections; Topographical surveying. Theory and practice. TOPOGRAPHICAL DRAWING: Contour maps; Drawing of profiles and cross sections; [48].

JUNIOR YEAR.

First Term.

MATHEMATICS, PHYSICS and ENGLISH as in the Bachelor of Science course. GEODESY: Measurement of heights with barometer and thermometer; Hydrography; Surveying with the stadia and gradienter; Solar compass; Town, plane-table and mine surveying. Theory and practice. Preliminary and location surveys of routes. Theory. TOPOGRAPHICAL DRAWING: Hydrographic charts; Town maps; Plans and profiles of mines; Maps of landscape surveys; [96].

Second Term.

PHYSICS, ENGLISH, JURISPRUDENCE, POLITICAL ECONOMY, and GEOLOGY, as in the Bachelor of Science course. MECHANICS: Analytical mechanics of solids and fluids; [80].

SENIOR YEAR.

First Term.

ASTRONOMY: General; [48]. PRACTICAL ASTRONOMY, as in the elective course in the Academic department; [16]. APPLIED MECHANICS; Elasticity and strength of materials; [32]. Theory of stresses in roofs and bridges; [96]. MECHANISM AND MACHINE DRAWING; [32]. CONSTRUCTIONS; Roads, railroads, canals, and tunnels; [32].

Second Term.

APPLIED MECHANICS; Stability of walls and arches; Theory of constructions. MACHINES; General theory; Hydraulic motors; Theory of steam and air engines; [84]. STEREOTOMY; Stone-cutting, theory and plates; [28]. MATERIALS AND CONSTRUCTIONS; Sewerage and drainage; Water supply; Materials of structures; Dressing and preservation of materials; Foundations; Details of roofs and bridges; [70]. PRACTICAL ASTRONOMY, as in the elective course in the Academic department; [14]. PRACTICAL PHYSICS; Advanced study of terrestrial magnetism and electrodynamics; [28].

NOTE.—It will be noticed that the above list of studies does not provide for regular instruction in the modern languages after the Sophomore year. It is, therefore, necessary to explain that a partial equivalent for such instruction has been provided by the use of French and German books of reference in some of the technical courses of the Junior and Senior years.

COURSE IN ELECTRICAL ENGINEERING.

The Course in Electrical Engineering is designed to prepare those who pursue it to engage in any branch of engineering or technical work which demands a scientific knowledge of electricity. The course, or, more properly, that part of the course which is under the immediate control of the department, will occupy two years. This amount of time is so scanty when the wide extent of the field of study and the amount of practical work involved are taken into consideration, that a thorough knowledge must be required of every

applicant for admission of those subjects which are essential to the successful prosecution of his work. The subjects required for admission are mathematics, including trigonometry, analytical geometry and the calculus; physics; and the elements of chemistry. Mathematics will be treated as a working instrument, of which the student has already acquired control, and no time during the course will be devoted to it. The same may be said of the French and German languages, although the applicant will not be examined on his knowledge of them.

Regular students of the School of Science who wish to enter this course may be admitted to it without examination at the beginning of their Senior year, and Academic students may enter at the same period if they have pursued the Junior Elective course in Mathematics.

The course will be conducted, on its theoretical side, on the basis of Mascart and Joubert's treatise. Following this will be the theory of electrical measurements and the various technical courses. These courses will embrace all the important applications of electricity in the arts;—the theory and construction of dynamo machines; systems of electric lighting; electric transmission of power; electro-chemistry and electro-metallurgy; telegraphy, telephony, etc.

The practical part of the course will commence with laboratory work in general physics, with special reference to the determination of force and energy relations, then will follow an extended course in electrical measurements and in electrical testing. Each of the technical courses will involve practical work which will, so far as possible, be laid out on a scale similar to that which is met with in actual practice.

To meet the requirements of this course there have been provided, in addition to the facilities afforded by the laboratories of the John C. Green School of Science, two buildings specially planned and constructed. One of them contains the necessary motive power and collection of dynamo machines, and the other contains every instrument of precision required in the most careful measurement of electrical quantities. This latter building stands apart from all other buildings, is entirely free from iron in its construction, and is so designed that galvanometers, electrometers, etc., are free from

mechanical and magnetic disturbances. This building is connected by means of large conducting wires with the dynamo plant and with the laboratories of the School of Science, so that its standard instruments are available at any time for standardizing the many measuring instruments which they contain.

The outfit of dynamo machines exhibits the various systems in commercial use on a scale comparable with that employed in actual practice.

EXAMINATIONS, STANDING AND GRADUATION.

EXAMINATIONS.

Regular examinations ordinarily take place at the end of a term, each class being examined in the studies of the term. Occasionally when a course of study is finished before the close of a term, the examination takes place when that study is completed; but such examinations are not allowed to interfere with the regular exercises in other studies.

Examinations are for the most part conducted in writing, but in certain subjects are wholly or partly oral. Private examinations are not allowed except in extreme cases, and by special permission of the Faculty. Absence from an examination, except for reasons of absolute necessity, will be regarded as a serious delinquency, and a subsequent examination will not be granted except by a vote of the Faculty.

Regulations for Removal of Conditions and for Omitted Examinations.

The maximum mark is one hundred.

The minimum mark for passing in any subject is sixty.

I. Students conditioned at the end of the first session will have one opportunity of removing such condition during the first month of the second session. If they again fail, no other opportunity will be given until the following September, except by special vote of the Faculty.

II. All deficiencies, whether from conditions or omitted examinations, standing against any student at the end of the College year, must be made up within three days after the opening of the College

in the following September, unless longer time is specially granted by the Faculty. Such extension of time will not usually be granted except in cases of serious illness or for other providential causes.

III. Students failing to remove all conditions within the time allowed them in September, must repeat with the next lower class the courses of study in which they have failed; and the Faculty will determine in each case, as to the student's ability to continue other studies with his original class.

It will ordinarily follow that such student cannot complete his course of study in time to receive a degree with that class. If the studies in which he is allowed to continue occupy more than one-half of his schedule time, his name will be printed in the Annual Catalogue with his original class, but marked "*Not candidate for a degree with this class.*" If not more than one-half, he will be enrolled with a lower class.

IV. Unexcused absence from any examination, whether regular or special, in any subject, will be regarded as an absolute failure involving a condition in that subject.

Excused absence from examinations at the end of the first session must be made up within the first month of the second session unless longer time is granted by the Faculty.

V. If any student is persistently neglectful of his studies after due admonition, his parent or guardian will be informed of the fact: and if no satisfactory improvement follows will be requested to remove him from College.

STANDING.

The results of the term examinations are combined with those of the recitations to decide the relative standing or rank of the student during the term. In computing ranks, each study, elective or required, is estimated relatively to the others according to the number of hours which it occupies in the weekly schedule of lectures and recitations. The conduct of the student and his attendance also affect his standing. The maximum mark in each department is one hundred; the minimum, or passing mark, is sixty. A student whose average, as determined by the combination of his examination and recitation marks, falls below sixty, is conditioned, and in order

to continue with his class must be re-examined. A report of the standing of each student is made to his parent or guardian by the Registrar of the College at the close of the first term and at the end of the year. The last report gives the student's standing for the year.

The final rank of a student is calculated from all the marks received by the student during his College course.

GRADUATION.

Students who have fulfilled the requirements of their undergraduate courses, passing satisfactory examinations in all their studies and presenting acceptable graduation theses, are ordinarily recomended by the Faculty for the degree attached to the course they have pursued, and if the recommendation is approved by the Trustees they receive diplomas signed by the President and the Clerk of the Board of Trustees.

The subjects selected for the graduation theses must be reported to the Faculty, by the candidates for the degree of C. E., on or before the first Monday of October, and by the candidates for the degree of B. S. on or before the second Monday of January, of their Senior year.

The graduation theses must be finished by the second Saturday before Commencement (*i. e.* May 31, 1890), and will be publicly read and defended by the student during Commencement week.

UNIVERSITY COURSES

IN THE

ACADEMIC AND SCIENTIFIC DEPARTMENTS.

Provision has been made for courses of instruction open to resident graduates of this and other Colleges, under the following regulations:

Every instructor in the College shall be at liberty, with the leave of the Faculty, to give instruction to graduates. He shall meet with his class for at least one hour a week, and not more than three hours a week, during the Academic year, and shall require the members of his class to undergo rigid examinations on the course pursued.

Each graduate student attending instruction regularly, and passing the examinations, is entitled to a certificate stating what he has done, signed by the President in behalf of the College.

Students by pursuing these courses may also qualify themselves for the degrees, Master of Arts, Master of Science, Doctor of Philosophy, Doctor of Literature, or Doctor of Science, according to the regulations prescribed under the headings "Master's Degrees" and "University Degrees."

Each graduate student shall pay ten dollars, or such sum as the Faculty may require, for every course of instruction that he enters requiring an hour per week, and shall defray whatever expense may be incurred by the use of instruments and materials employed by him. This charge may be remitted in whole or in part when the circumstances of the student require it. All undergraduate courses of lectures or instruction are also open to graduate students without the payment of any fees except for material used.

Arrangements for the University courses should be made by application to the individual instructors.

University courses in the following subjects are announced for the present year: Theoretical ethics, English ethics, science and religion, modern philosophy, history, Latin, pedagogics, monastic art, Greek architecture, Oriental archæology, art of the Renaissance, English language, English dramatists, Sanskrit, Semitic languages, physics, higher mathematics, theoretical astronomy, biology.

Opportunity is also offered to graduates for work in the following subjects, in connection with the regular undergraduate courses: Anglo-Saxon, English literature, psychology, history of philosophy, metaphysics, ethics, science and religion, history of art, international, constitutional and Roman law, geology, mineralogy, biology, physics, practical astronomy, Senior mathematics, analytical and applied chemistry, assaying, topography, civil engineering.

UNIVERSITY COURSES.

Philosophy.

The Ex-President will deliver a course of three University lectures, early in the second term, on The Prevailing Types of Philosophy, Can They Reach Reality Logically?

Theoretical Ethics.

The President lectures one hour a week throughout the first term on Theoretical Ethics.

History of English Ethics.

One lecture a week by the President during the second term. The lectures in this course will trace the history of ethical thought in Great Britain from Hobbes to Mill. They will be critical and expository, exhibiting the leading features of representative systems, comparing different schools of thought with each other, and showing the relation they sustain to contemporary ethical discussion.

Science and Religion.

The undergraduate course in this department will be followed by a graduate course in the history and the logic of the sciences,

treating of their emerging problems as connected with revealed religion. Professor Shields will lecture one hour a week during the second term.

Plato and His Philosophy.

Professor Orris offers a University course in Plato, giving analyses of his dialogues, lectures and dictations on his philosophy, and instruction in the language in connection with the reading of the Phædo and parts of the Republic.

One hour a week during the first and second terms.

Readings in Modern Philosophy.

Professor Ormond devotes one exercise a week throughout the year to readings in modern philosophy. Selections are made from the works of Descartes, Locke, Hume, Kant, Hamilton, Spencer, and other modern philosophers. The readings are accompanied with lectures and discussions.

History.

Professor Sloane conducts one exercise a week throughout the second and third terms. Subject: Parliamentary and Congressional Government.

Monastic Art.

This course, which aims to show the share taken by the Monastic orders in the development of Mediæval art, will be conducted, once a week through the year, by Professor Frothingham.

Greek Architecture.

Professor Marquand gives a course in Greek Architecture, with one exercise a week throughout the year.

Art and Archæology.

The Senior Electives in Oriental and Greek Archæology and in Mediæval and Renaissance Art are open also to graduates. Special investigations will also be undertaken by the Fellow in Archæology.

Pedagogics.

A University course is offered by Professor West in pedagogics during second and third terms. It consists of the study of leading educational works and systems and of the theory of education. A thesis is required in addition to the examination at the close.

Latin.

Professor Packard's course for graduates is, Bruns, Fontes Juris Romanis Antiqui, with study of primeval History of Rome, and use of Corpus Inscriptionum Latinarum and Ritschl, Priscæ Latinitatis Monumenta.

English Language.

A University course in English Philology will be offered by Professor Hunt. In the first term, Anglo-Saxon will be studied two hours a week, the authors used being Beôwulf, Caedmon's Exodus and Daniel, Cynewulf's Elene. In the second term, Early or Middle English will be studied two hours a week, the authors being Morris and Skeat's Specimens of Early English, Langlande's Piers the Plowman, Chaucer's Prologue.

Sanskrit.

Graduate students may begin Sanskrit with the Senior elective class, or continue studies already begun. For outline of course see p. 41.

Semitic Languages.

Professor Frothingham conducts the following courses as a continuation of the undergraduate course in Hebrew. *Syriac* language and literature, twice a week through the year with Nestle's Grammar. Readings in *Arabic* prose and poetry once a week through the year.

Physics.

These courses afford opportunity for advanced work in the laboratory and for the study of theoretical physics. In the laboratory the student is either conducted through courses covering

general topics, such as heat, optics, or electricity, which are similar to the courses of the Senior year, but more extended and exhaustive in their character; or, if he so desires, is encouraged to undertake for himself the investigation of special topics. In the theoretical courses the student reads, for a general survey of the subject of mathematical physics, some standard text-book such as Jamin and Bouty's Cours de Physique, and for the mathematical theory of the particular subject he is working upon, special treatises, such as Fourier's Analytical Theory of Heat, Verdet's Théorie Mécanique de la Chaleur, Verdet's Leçons d'Optique Physique, Mascart and Joubert's Electricity and Magnetism, Maxwell's Electricity and Magnetism, Kirchhoff's Mechanik, etc. Professors Brackett and Magie conduct these courses.

Higher Mathematics.

University courses are offered this year by Professor Fine in differential equations, in the theory of functions and in the higher algebraic curves and surfaces; and by Dr. Thompson in the theory of invariants. These courses are based on the treatises of Forsyth and Boole, Durége and Clebsch and Gordan, Salmon and Clebsch, and Salmon, Clebsch and Gordan respectively.

Astronomy.

This course is conducted by Professor Young and Mr. Reed. It consists of:

(a) Practical Astronomy—the same as in the Senior elective, previously described in the course of study of the Academic department. This is open to such graduates as did not take it in their college course.

A more extended course is given to candidates for the degrees of Ph.D. or D.Sc.

(b) Theoretical Astronomy—one hour weekly through the year. This course consists in the reading of Watson's Theoretical Astronomy, supplemented by selections from Oppolzer and Klinkerfues.

Biology.

A thorough advanced course in Biology has been established in connection with the Geological, Zoological, Botanical, and Chemical departments, the objects in view being (1) to foster a spirit of original research, (2) to qualify advanced students to become teachers. This course is open to college graduates, also to students presenting diplomas from recognized medical schools.

It is not restricted to students who are candidates for a degree, if they possess sufficient elementary knowledge to profit by the instruction.

The following subjects of instruction are arranged for:

Professor Macloskie—I. Anatomy and embryology of the higher invertebrates. II. Vegetable morphology and histology.

Professor Cornwall—Physiological chemistry.

Professor Libbey—I. The microscope and microscopic technology. II. Histology. III. Deep sea soundings and dredgings; recent methods and results.

Professor Osborn—I. Comparative anatomy of the vertebrates. II. Elements of embryology.

Professor Scott—I. Vertebrate and invertebrate palæontology. II. Advanced embryology.

These courses are of a comprehensive and elastic character, and according to the requirements and wishes of different students, include much laboratory work under the direction of the instructor. At the close of the first term, the student may select a department of special study for his thesis, which must present the results of original work.

MASTER'S DEGREES.

Master of Arts.

The degree of Master of Arts (A. M.) is conferred, three years after graduation, upon any Bachelor of Arts of this College who is pursuing one of the learned professions (including teaching), or who, on or before May 1st of the year in which he seeks the degree,

shall have submitted to a committee appointed by the Board of Trustees, a satisfactory paper, literary, philosophical or scientific.

The same degree may be conferred, two years after graduation, upon any Bachelor of Arts who shall have devoted one of the years exclusively to study in the College under the care of the Faculty, passing rigid examinations upon the studies pursued; or who shall have taken at least one University course each year for the two years and passed satisfactory examinations upon his work.

Master of Science.

Bachelors of Science who shall have devoted one year in the College exclusively to the study of such of the following subjects as the Faculty shall prescribe, and who shall have shown satisfactory proficiency therein by dissertations and examinations, may apply for the degree of Master of Science (M. S.). The prescribed subjects are:—Biology, mathematics, rational and applied mechanics, practical astronomy, applied chemistry, qualitative analysis, quantitative analysis, physics, mineralogy, drawing, modern languages.

Any Bachelor of Arts, who after examination may be found to be prepared to pursue a University course in science, may become a candidate for the degree of Master of Science on the same conditions as a Bachelor of Science.

UNIVERSITY DEGREES.

The following degrees are classed as University Degrees: Doctor of Philosophy (Ph.D.), Doctor of Literature (Litt.D.), Doctor of Philosophy (Ph.D.) in Science, Doctor of Science (D.Sc.) and Bachelor of Divinity (B.D.)

Any person who desires a more complete statement than that given below in regard to the requirements and regulations concerning any one of the University degrees can obtain the same upon application to the President.

GENERAL REGULATIONS CONCERNING DOCTOR'S DEGREES.

Every candidate for one of the above doctorates must be a graduate of some approved college. If he has the degree of Bachelor of Arts he may apply for admission to the courses for any of the doctorates; but if he has the degree of Bachelor of Science or an equivalent degree, the courses for Ph.D. in Science and D.Sc. only are open to him.

Every applicant shall appear in Princeton on the fourth Wednesday in September to pass a preliminary examination upon certain subjects which are intimately connected with his proposed course of study and which are necessary for its successful prosecution.

The candidate having fulfilled the requirements for admission, must then adopt one of the following plans for his work:

1. He may pursue a course of prescribed study for two years, one year at least of which is to be spent in Princeton in the exclusive study of branches in his chosen department.

2. He may without residence in Princeton pursue a course of study for three years under the direction of a committee of the Faculty appointed for the purpose. This plan does not demand the exclusive employment of the candidate's time in prescribed study for the degree.

At the beginning of the course the candidate shall announce for approval by the Faculty some department as his chief subject of study, and during the first year of his course, he shall also announce for approval by the Faculty two subsidiary subjects.

At an appointed time during the last year of his course the candidate shall present a thesis on some special topic in the department which constitutes his chief subject. This thesis must present evidence of high scholarship and original research.

At the close of his course the candidate must pass a final examination on both his chief and subsidiary subjects of study. He will not be admitted to the examination unless his thesis has been accepted. It is further required of a candidate for the degrees of Ph.D. in Science or of D.Sc. that he publish his thesis, before the degree will be conferred.

In order to meet the expenses of examinations, each person applying for a doctorate shall pay a fee of forty dollars upon first

application, twenty dollars each subsequent year of the course, and fifty dollars when the degree is conferred.

If the candidate is pursuing studies in Princeton he shall pay, in addition to the above mentioned sums, the regular fees for such University courses as he may take (see p. 104).

Bachelor of Divinity. (B.D.)

This degree may be conferred upon a Bachelor of Arts of any approved college who shall also have completed a three years' course of theological study in any approved institution, followed by a two years' course of prescribed study in theology. This special course of study shall be prescribed, and all examinations required shall be conducted by examiners designated by the Board of Trustees.

The regulations as to preliminary examinations, chief and subsidiary subjects of study, thesis and final examination are similar to those pertaining to the doctorates, except that only one subsidiary subject is required. Residence in Princeton is not necessary for obtaining the degree.

The fees are the same as those paid by candidates for the Doctor's degrees.

UNIVERSITY FELLOWSHIPS.

These fellowships were founded by subscription and endowment and are intended by the founders to encourage study and promote original research in the several departments to which they are assigned. They are distinguished from the college fellowships by being open to the graduates of any American college, while the appointments are made, not by competitive examination, but by a comparison of the records presented by the applicants as to their previous collegiate standing, capacity and character.

The University Fellowships are subject to the following regulations:

1. The Fellowships are to be held for one year, but in cases of special merit they may be continued for a longer period, by recommendation of the department and sanction of the Faculty.

2. The candidates shall be graduates of not more than five years' standing of any accredited American college. An application should be accompanied with evidence of the qualifications of the applicant to pursue an independent course of study and investigation in the department concerned.

3. Appointments shall be made by the Faculty upon recommendation of the professors in the department interested, and shall be announced at Commencement.

4. All applications must be in the hands of the Registrar of the College on or before May 15th, the appointees to hold their positions for a year from the following September.

It is deemed essential to the development of the University department that the number of these fellowships should be increased to at least twenty. The following have already been founded:

THE SOUTH EAST CLUB UNIVERSITV FELLOWSHIP IN SOCIAL SCIENCE.

This fellowship pays to the holder $500 per annum.

THE CLASS OF 1877 UNIVERSITY FELLOWSHIP IN BIOLOGY.

This fellowship pays to the holder $400 per annum.

THE UNIVERSITY FELLOWSHIP IN ENGLISH.

This fellowship pays to the holder $400 per annum.

THE UNIVERSITY FELLOWSHIP IN ARCHÆOLOGY.

This fellowship pays to the holder $400 per annum.

COLLEGE FELLOWSHIPS, COMPETITIVE SCHOLARSHIPS AND PRIZES.

Besides the degrees and honors conferred in the regular course, annual fellowships, competitive scholarships and prizes are offered as special incentives to study, in the classes or departments with which they are connected.

Only matriculated students who are candidates for a degree are admitted to the competition for these fellowships, prizes and scholarships, and no one is admitted to such competition who has failed to pass satisfactorily his last preceding examination in any of the departments.

No member of any class is allowed to compete for more than one of the fellowships or scholarships offered to that class.

The names of the college fellows, scholars and prizemen of each year are included in the Honor List for the year.

The funds for the college fellowships, prizes and competitive scholarships are special gifts, and the income is appropriated according to the specific instructions of the donor. They do not belong to the general funds of the College. If, therefore, there be default in the interest on the securities in which these funds are invested, the College assumes no pecuniary responsibility in the matter.

FELLOWSHIPS.

Every competitor must have been a member of the College in full standing for at least two Academic years previous to the fellowship examinations.

No student whose final rank for scholarship is below the third general group can be a competitor for any fellowship; and no student can be a competitor for the fellowship of any particular department whose average rank for the last two years of his course is below the second group in that department.

Every Fellow obtaining any one of the $600 fellowships must devote his whole time for one year to study in the department for which the fellowship is provided, under the direction of the Professors in that department. He must reside in Princeton, and pass two rigid examinations on his work, unless by a vote of the Faculty he be allowed to study at an approved foreign university, in which case he shall from time to time furnish written reports of his work to the Professors in his department. The result of every examination and the reports of work done abroad shall be immediately reported to the Faculty. If resident in Princeton, he shall be allowed to occupy free of cost in one of the College buildings a room assigned to him by the College authorities. He shall be regarded, while occupying such place, as a resident officer of the College, and shall perform such duties in preserving order and decorum in the College edifices as the President and Dean shall assign. He shall also, when called upon, perform such duties in the department to which he belongs as may be assigned to him by the President at the request of the Professors in that department.

THE CHANCELLOR GREEN MENTAL SCIENCE FELLOWSHIP.

This fellowship, originally founded in 1870 upon the annual payment of $600 by the late Chancellor Henry W. Green, was permanently endowed in 1878 by a gift of $10,000 by his widow.

The income of this fund, to be paid quarterly, will be awarded to that member of the Senior class who shall write the best essay on Theories of Knowledge, with an examination of Realism, Idealism and Agnosticism (to be given in on or before June 1), and who shall stand highest at a special examination to be held in June, on the following subjects:

A general knowledge of the philosophies of Plato, Aristotle, Descartes, Locke, Leibnitz, Hume, Kant and Hamilton. Cicero De Officiis, Book III, *De Contentione Honesti et Utilis*. Theoretical ethics, psychology and metaphysics (McCosh's First and Fundamental Truths). The syllogism, and induction.

THE CLASSICAL FELLOWSHIP.

The Classical fellowship has been, for a time, without funds. The sum of $600, payable quarterly, was previously awarded to the

successful competitor. A portion of that sum, and possibly the full amount, will be awarded to that member of the Senior class who shall stand highest at a special examination, to be held in June, 1890, on the following subjects:

IN GREEK.

Translation from English into Greek. Translation of Prose Greek at sight. The *Alcestis* of Euripides, Aristophanes' *Birds*, Plato's *Charmides* and *Lysis*. The Philosophy of Plato.

IN LATIN.

Translation from English into Latin. Translation of Latin at sight. Cicero *de Finibus*, and the Relations of Roman Philosophy to Roman Religion. History of Latin Literature.

THE CLASS OF 1860 EXPERIMENTAL SCIENCE FELLOWSHIP.

This fellowship was founded in 1870 upon the sum of $10,000 subscribed by the Class of 1860. A deficiency of income, resulting from the depreciation of the value of the securities in which the principal was invested and the lowering of the rate of interest, is paid, by the consent of the donor, from the income of the Magee Professorship of Mining and Engineering, founded by George J. Magee, Esq., of the Class of 1860.

The sum of $600, to be paid quarterly, will be awarded to that member of the Senior class who shall stand highest at a special examination, to be held in June, on the following subjects, viz: 1. The theory of heat. 2. (a) The geology of coal, oil and gas. (b) The history of mammals and birds. 3. Iron and steel.

THE J. S. K. MATHEMATICAL FELLOWSHIP.

The J. S. K. Fund was established in 1878 upon the sum of $11,000, given by a gentleman in New York, $600 of the income of which is devoted to this fellowship, and $200 to the Freshman First Honor prize.

The sum of $600, to be paid quarterly, will be awarded to that member of the Senior class who shall stand highest at a special examination to be held in June, on the following subjects: Analytical geometry; differential and integral calculus.

THE BOUDINOT FELLOWSHIPS.

These fellowships are founded upon a bequest of Dr. Elias Boudinot, of New Jersey, and yield each the annual sum of $200.

THE HISTORICAL FELLOWSHIP.—The sum of $200, to be paid quarterly, will be awarded to that member of the Senior class who shall write the best essay on The Development of the Secession Policy from 1856 to 1861, and pass the best examination in June next on The Practice and Theory of Government in the American Territories. The essay to be presented on or before June 1st.

For the year 1891 and subsequent years, the conditions of the Historical Fellowship have been altered, as follows: the sum of $400 per annum, to be paid quarterly, will be given to the holder of the Fellowship, who shall be appointed by the Faculty, upon the nomination of the President and the Professor or Professors of History for any period not exceeding three years, on condition that he reside in Princeton and devote his whole time to historical research, that he deliver such lectures and conduct such exercises as the President and the Professor or Professors of History shall direct, and that he perform such other duties as may be assigned him in accordance with the general regulations respecting the duties of resident Fellows.

THE MODERN LANGUAGE FELLOWSHIP.—The sum of $200, to be paid quarterly, will be awarded to that member of the Senior class who shall pass the best examination in June, on the following subjects:

A comprehensive knowledge of the French and the German descriptive grammars. Also, the origin and historical development of these languages. In Literature—The mediæval epics of France and Germany, with the sources of their inspiration. Also, their lyrical poetry and its representatives; the leaders of the classical drama in France in the 17th century; the current of thought in the 18th century—its exponents and results. A comparative view of Germany's intellectual state before and after the Reformation. Significance of the "Sturm und Drang" period with its chief participants. The current of thought in Germany from the time of her mental emancipation from foreign influences to the present day. Reading at sight of any given author of the classical or the recent period. An

essay of not less than four pages (foolscap) in one of these languages. The examination will be conducted both orally and in writing.

The Fellow shall from time to time during the following year, as may be required by the Professor of Modern Languages, give evidence by written papers that he is reading such a course as the Professor may approve.

THE E. M. BIOLOGICAL FELLOWSHIP.

The Biological fellowship will be awarded to that student who shall stand highest at a competitive examination on subjects assigned by the Professors of the Biological department.

The competition for this fellowship will be open to any member of the Senior class in either the Academic or Scientific department, or to any college graduate who shall have pursued during the preceding year, the university course in Biology at Princeton, and who shall, in the opinion of the examiners, be deemed competent to pursue the subject advantageously.

This fellowship conveys the use of a table in the National Seaside Laboratory at Wood's Holl, Mass., together with all the facilities afforded for the collection and study of animal life during the season favorable for such investigations. In the winter months following this laboratory work the Fellow will pursue his studies at Princeton, and will be required to prepare and submit a thesis embodying the results of his summer researches.

The examinations for this fellowship in 1890 will be held in June upon the following subjects:

1. Gymnosperms and Pteridophytes.
2. Embryology and anatomy of the Echinodermata.
3. Anatomy and embryology of the Teleosts and Selachians.
4. The histology of the nervous system.

PRIZES AND COMPETITIVE SCHOLARSHIPS.

ALEXANDER GUTHRIE McCOSH PRIZE.

The interest of $1,500 will be given annually to that member of the Senior class who shall stand the best examination and write the

best essay in Philosophy, including Psychology, Logic, Metaphysics and the History of Philosophy. The essay is to be handed in to the President of the College on or before June 1, 1890.

THE LYNDE PRIZES.

Three prizes—the income of $5,000, contributed by Charles R. Lynde, Esq.—will be awarded by a committee appointed by the Faculty, to the three successful competitors in a debate on the Tuesday evening preceding Commencement. The competitors are six members of the Senior class—representatives of the Literary Societies—selected by committees appointed by the Societies respectively, from their own members in the Faculty.

THE BAIRD PRIZES.

Through the liberality of Charles O. Baird, Esq., the following prizes, representing the income of $6,000, will be given to those who excel in the oratorical exercises of the Senior class, viz.: The Baird prize of $100, to the best speaker of those who have ranked among the first six writers in any two of the three departments of English Literature, Rhetoric and Oratory; a prize for oratory, of $50, to the best speaker, exclusive of the Baird Prizeman, of those who, in the same departments, have ranked among the first twelve writers; a prize for delivery, of $30, to the best speaker exclusive of the two just mentioned; also, a prize for poetry, of $50; and two prizes of $40 and $30, respectively, for the best and the second best written disputations.

THE CLASS OF 1859 PRIZE.

The interest of $2,000, given by the Class of 1859, will be awarded to that member of the Senior class who shall write the best essay on James Russell Lowell, as a Poet, and pass the best examination on Shakespeare's *Measure for Measure*. The essay must be handed in on or before June 1, and the examination will be held in June. The subject of the essay for the Class of 1891 will be Walter Savage Landor.

THE GEORGE POTTS BIBLE PRIZES.

The yearly interest of $1,000, given in 1867 by Mrs. Sarah A. Brown, expended in the purchase of two copies of Matthew Henry's Commentary on the Bible, will be presented to the two best Biblical scholars of the Senior class at the end of their College course.

THE LYMAN H. ATWATER PRIZE IN POLITICAL SCIENCE.

This prize, being the annual interest on the sum of $1,000, contributed by the Class of 1883, was instituted as a memorial of Rev. Lyman H. Atwater, D.D., LL.D., Professor of Political Science. It will be given to that member of the Senior class who shall be adjudged by the Professors of Political and Social Science to have passed the best examination and written the best essay. The subject for the examination in 1890 will be Ballot Reform. The subject for the essay will be The Legitimate Uses of Money in Elections. The essay must be ready June 1, 1890; the date of the examination will be announced at that time.

FREDERICK BARNARD WHITE PRIZE IN ARCHITECTURE.

Mrs. Norman White has established in memory of her son, Frederick Barnard White of the class of 1883, a prize in architecture, yielding $50 each year. It is open to the entire Senior class and will be given for the best essay and examination. The subject of the essay for this year is The Origin of the Ionic Style. The subject of the examination will be The History of Ionic Architecture. The essay should be presented before June 1, 1890.

THE THEODORE CUYLER PRIZE IN ECONOMICS.

The interest of $1,000, presented by Mr. C. C. Cuyler, of the Class of 1879, will be given to that member of the Senior Class who shall present the best thesis and pass the best examination in June, 1890, on some subject in Political Economy, to be assigned by the Professor in charge of the Department of Political Economy.

CLASS OF 1869 PRIZE.

The annual interest of $3,000, given by the Class of 1869, will be awarded to that member of the Senior class who shall pass the

best examination in Ethics and write the best essay. The subject of the essay for the Class of 1890 will be A Criticism of Sidgwick's "Methods of Ethics."

THE WOOD SCHOLARSHIP.

The sum of $150, the income of a legacy of Dr. George B. Wood, will be awarded to that member of the Junior class who shall stand highest for the Junior year.

JUNIOR ORATOR MEDALS.

Four gold medals, or books of equal value, will be awarded by a committee appointed by the Board of Trustees, to the four successful competitors in an oratorical contest on the Monday evening before Commencement. The competitors are eight members of the Junior class—four from the Cliosophic and four from the American Whig Societies—selected by committees appointed by the Societies respectively, from their own members in the Faculty.

THE MACLEAN PRIZE.

The Maclean prize, founded by the will of the late Henry A. Stinnecke, consisting of the sum of $100, will be given to that one of the orators chosen by the Literary Societies from the Junior class, who shall on the Monday evening before Commencement pronounce the best English oration.

The committee of judges will be composed of the Professor of Rhetoric and two graduates of the College appointed by the Board of Trustees.

DICKINSON PRIZE.

The Dickinson prize, founded by John Dickinson, Esq., of New Jersey, in 1782, consisting of a medal of the value of $60 (or its equivalent in money), will be awarded to that member of the Junior class who shall write the best dissertation upon The Methods of Discovering Truth in the Various Sciences. The dissertation to be presented on or before June 1, 1890.

CLASS OF 1876 MEMORIAL PRIZE FOR DEBATE IN POLITICAL SCIENCE.

This prize is to be given annually by the Class of 1876 to the successful contestant in a debate on a subject of current interest in

American politics, to be held on Washington's Birthday, said prize to be the interest of $1,000. The competitors, four in number, one from each class, are to be chosen by a vote of the respective classes.

THE THOMAS B. WANAMAKER ENGLISH LANGUAGE PRIZE.

This prize, the yearly interest of $1,000, will be given to that member of the Junior class who, at the close of the Junior year, shall pass the best examination in Early and Shakesperian English and offer the best thesis on some assigned topic in English Philology.

THE STINNECKE SCHOLARSHIP.

The Stinnecke Foundation was established in 1870 by the will of the late Henry A. Stinnecke, of the Class of 1861, and was supplemented by a bequest received in 1876 from his aunt, Miss Maria Stinnecke. The income is divided between the Stinnecke scholarship of $500 and the Maclean prize of $100.

The Stinnecke scholarship, of the annual value of $500, tenable during the College course, unless forfeited by neglect of study, "will be given to that person who, having entered the Sophomore class, shall pass the best examination at the opening of the session in September, 1890, in the Odes of Horace, the Eclogues of Virgil, and the Latin Grammar and Prosody, as well as the Anabasis or Cyropædia of Xenophon and the Greek Grammar." Students of the College who have been members of the Freshman class, as well as new students entering the Sophomore class, will be admitted to such examination. The committee of examiners is appointed by the Board of Trustees.

THE CLASS OF 1861 PRIZE.

The interest of $1,200, given by the Class of 1861, will be awarded to that member of the Sophomore class who shall pass the best examination in June next on those portions of the mathematical course of the Sophomore year which shall be especially designated by the Professor of Mathematics.

THE FRANCIS BIDDLE SOPHOMORE ESSAY PRIZE.

This prize, the yearly interest of $500, will be given to that member of the Sophomore class, not below the fourth group in his

English studies, who in the judgment of a committee appointed by the Faculty, shall write the best English essay of the year.

THE FRESHMAN FIRST HONOR PRIZE.

A prize of $200, part of the income of the J. S. K. Fund, to be paid in quarterly installments during the following year, will be awarded to that member of the Freshman class who, having entered said class at the beginning of the College year, shall, at the end of the year, be reported to the Trustees by the Faculty as having attained the "highest average grade" in scholarship, provided he pursue his studies in this College and maintain a good standing during the Sophomore year. No student who has been suspended from College, or who has been put upon his last probation, shall be eligible to this prize.

SOCIETIES.

Literary Societies.

The Cliosophic and American Whig Societies originated early in the history of the College. They are conducted by the undergraduates, but also include in their organization graduates and officers of the College. Both possess halls containing the rooms for meeting, reading rooms and valuable libraries of over 8,000 volumes each. They both pursue courses of literary exercises, award numerous prizes for orations, essays and debates, and grant diplomas to their respective graduates.

A generous competition for College honors has always prevailed between them. On the evening before Commencement representatives of the Societies from the Senior class engage in a public debate —on the preceding evening representatives from the Junior class engage in a competition in oratory. The details respecting the Lynde debate and the Junior orations will be found on pp. 119, 121.

These Societies are considered a part of the educational appliances of the College, and students are advised to join them.

The Engineering Society.

This is an organization conducted by the undergraduates of the Engineering Course, although its membership includes students in other departments of the College, and graduates.

Meetings are held weekly in the reading room of the Society in University Hall, and the exercises are of a literary, scientific and technical character.

The Philadelphian Society.

This is a society composed of undergraduates, united by a covenant of mutual religious faith and sympathy. It was founded in

the year 1825, and has always been an active and successful agency in promoting the religious life of the College. Devotional meetings are held on Thursday and Saturday evenings, under its direction, usually conducted by members of the Faculty. Murray Hall, the building belonging to the Society, was erected from a bequest left for the purpose by Hamilton Murray of the class of 1872. It contains, besides the room for worship, a reading room supplied with religious books and periodicals.

The St. Paul's Society.

The St. Paul's Society is an association similar in nature and aim to the Philadelphian, and is intended to be helpful, devotionally and practically, to those students in the College who have been accustomed to the worship of the Protestant Episcopal Church. It has weekly meetings, conducted by the students, and ordinarily a course of sermons is delivered annually in Trinity Church under its auspices.

BUILDINGS, LABORATORIES, COLLECTIONS.

The buildings are situated in a campus of about fifty-five acres and are grouped around Nassau Hall, which dates back nearly to the foundation of the College, having been erected in 1756. One wing of this building is still occupied by students. The central and eastern portions contain the geological museums and lecture room. The School of Science building, the Chancellor Green Library, Dickinson Hall, Murray Hall and several of the dormitories have been erected within the last nineteen years. The Marquand Chapel, the gift of H. G. Marquand, Esq., of New York, was built in 1882. The academic lectures and recitations are conducted mainly in Dickinson Hall, while the scientific lecture rooms and laboratories are principally in the building of the John C. Green School of Science, and in the new Biological Laboratory, presented by the Class of 1877. The Museum of Historic Art, which is in course of erection, will contain the lecture rooms of the department of Art and Archæology. The students—except by special permission of the Faculty—reside in the College dormitories—the west wing of Nassau Hall, East College, West College, Reunion Hall, Witherspoon Hall, Edwards Hall and University Hall.

THE CHANCELLOR GREEN LIBRARY.

The College library began with the College itself, in a bequest of books by Governor Belcher. The first catalogue, printed in 1760, shows that it then consisted of more than twelve hundred volumes. It suffered much during the Revolution and it was burnt, with Nassau Hall, in 1802. The gifts of many liberal friends soon re-established it, and it slowly advanced to 9,318 volumes in 1854. The want of resources for its increase kept it small, until the Elizabeth fund of $50,000 was created by Mr. John C. Green in 1868. When

the present library building was erected by him, in 1872–73, the collection contained about 25,000 volumes. Since that time its progress has been rapid, and it now consists of more than 65,000 volumes. The liberality of those who represent his estate has permitted for some years an average yearly increase of 5,000 volumes.

The library is probably strongest in the departments of mathematical, physical, natural and mental science, but it is rich, also, in philology and literature. Few libraries surpass it in respect to works on the origin and early history of our language and our race. Generous efforts have been made to enrich it with the serial issues of scientific associations abroad. A collection of books on the fine arts may be seen in a separate room. Two-thirds of the income of the Library Fund, appropriated to the departments by a committee of the Faculty, is to be expended under the direction of the Professors.

The arrangement of books upon the shelves is by topics, and is fully exhibited in the library catalogue, of which two copies lie on each of four tables near the desk. A manuscript appendix, constantly increasing, is accessible on application at the desk. The analysis of scientific periodicals is continually proceeding, forming a sort of "Poole's Index" for science, and the manuscript results, kept at the desk, are accessible to every Professor. Books serving to illustrate topics named by Professors for essays required from the students are temporarily withdrawn from circulation and kept by themselves to be read in the library; but such books may be borrowed for a night. A large collection of books of reference is kept constantly on the shelves, consisting of twenty encyclopædias, seventy periodicals and the dictionaries of twenty languages. A bulletin containing the titles of books bought during the preceding year, is printed early in every fall term, kept on the library tables, and given to every applicant. A new catalogue, containing in one alphabet both authors and subjects of books bought during the last five years, will next autumn be placed on the library tables, and offered for sale.

At the west end of the building is a reading room for the Faculty, furnished with more than a hundred periodicals of a high character, besides those on art. Students are admitted on application at the desk, and they may borrow the past issues of each periodical when a new number has reached the table.

Library Hours.

The Library is open every secular day; for the delivery and exchange of books from 10 A. M. to 1 P. M., and from 2 to 6 P. M.; for the consultation of books from 10 A. M. to 1 P. M., and from 2 to 6 P. M. In midwinter the want of light shortens the library day. The use of books is allowed, under the rules, to all the students. Resident graduates have the same privileges in the library as undergraduates.

SEMINARY LIBRARY.

The library of the Princeton Theological Seminary, which contains 51,000 volumes, is open to students of the College for consultation and loan of books on every secular day from 10 A. M. to 1 P. M.

MUSEUMS.

The E. M. Museum of Geology and Archæology.

This Museum, occupying the central and eastern wings of Nassau Hall, contains collections which are distributed in the three general departments of Geology (including Mineralogy), Palæontology and Archæology. Their arrangement is especially adapted to the purposes of comparative study.

In the GEOLOGICAL DEPARTMENT a special room contains a unique collection of over 5,000 specimens of erratic boulders and drift materials from Switzerland. There is also a special room devoted to the typical rocks and fossils of the State of New Jersey. A collection of the typical rocks of the State of New York represents the series as described in the Geological Survey of that State.

There is in this department a large collection of minerals, containing about 2,600 specimens, bequeathed to the College by the late Archibald MacMartin, of New York. The perfection of the specimens, and the number of localities represented in each family, make this collection one of especial value.

The collections of the PALÆONTOLOGICAL DEPARTMENT fill two large halls, with extensive galleries. The central hall, or Synoptic Room, is especially designed and arranged with reference to the general course in Geology. There are mounted casts of the gigantic

reptiles and mammals of the secondary, tertiary and quaternary ages. Around these the characteristic fossils of each of the great ages of life form as many groups, which follow each other in chronological order, while within each group the fossils are arranged according to their zoological affinities. The typical fossils selected agree, as far as possible, with those mentioned in Dana's Geology, as characteristic of different geological periods.

The upper or eastern hall contains the main collections for advanced students; on the platform are the skeleton of a mastodon, an Irish deer, a cave bear, and some of the extinct birds of New Zealand; also the skulls of uintatherium and loxolophodon, and a remarkably complete skeleton of cervalces. Surrounding the room, is a very perfect collection of vertebrate and invertebrate fossils from Europe and America, illustrating the vertebrate and invertebrate forms of all the geological epochs. Included in this series are the fine eocene and miocene fossils, procured in the West by the various Princeton collecting parties. There is also a series of fossil insects and plants from Colorado. Altogether the number of fossils, not counting duplicates, is 15,000.

During the past year the Museum has received as exchanges a handsome series of fossils from the Museums of Geology at Munich, Paris and London: and through the liberality of Mr. M. T. Pyne, of New York, an extensive series of fossil vertebrates from St. Gerard le Puy has also been added to the collection.

ARCHÆOLOGICAL DEPARTMENT.—Here are relics of the Swiss lake dwellings, and numerous implements of stone and bronze from Denmark; also several hundred flint instruments from most of the classical localities of the palæolithic and neolithic ages of France.

America is represented in the pottery and human remains of the mound builders, by several hundred specimens of Mexican and Peruvian pottery, and by a number of recent Indian relics. The interesting ethnological collection of objects, chiefly from Alaska and New Mexico, which Dr. Sheldon Jackson presented to the Theological Seminary of Princeton, has been transferred to this Museum by the Trustees of that institution, with the consent of the donor. The Archæological Gallery contains also a series of models of the cliff-ruins of the Southwest, executed under the direction of Dr. Hayden.

Below the eastern hall are the lecture and working rooms.

Biological Collections.

The biological collections have been chiefly made from the endowment fund of the John C. Green School of Science. There have also been many smaller donations to the Museum from time to time. The collections are placed in the large upper hall of the School of Science building, and are at present especially rich in osteological specimens. On the same floor are the laboratory and working rooms of the Curator of the Museum. The collection of vertebrates includes a large number of mounted and disarticulated skeletons of mammals, reptiles, birds and fishes, a series of the birds of New Jersey and of other districts of North America, carefully mounted, and alcoholic specimens. A feature of the ornithological collection is the very large number of unmounted bird skins, arranged for the purpose of comparative study of the plumage, beak and feet. Among the invertebrates are a series of ascidians, echinoderms, molluscs, crustaceans, insects, worms, corals, sponges, and microscopic preparations of small forms. The whole collection has also been catalogued and numbered. Students may apply to the Curator for access to the catalogue and cases containing the skeletons.

The Herbarium is on the second floor of the School of Science building, and is arranged as a museum of the botanical collections, also as a working laboratory for students. The plants are classified according to Bentham and Hooker's *Genera Plantarum*, and include specimens from the different sections of the United States, and from South America, Europe and Australia. There are extra specimens for laboratory use, and dissecting and compound microscopes, anatomical instruments, section cutters, models, diagrams and books of reference.

During the last year the collections have been increased by donations of valuable corals from Mrs. Robert L. Stuart, through Mr. H. J. Woodman of New York City, a set of Asiatic plants from Mrs. Catherine May of Trenton, a box of American plants from Rev. Dr. Craven of Philadelphia, specimens of corals from Rev. Dr. Peters of Pleasantville, N. J., newly discovered or rare invertebrates from Woods Holl, collected and presented by Professor Libbey, specimens of Californian reptiles from Mr. E. Sandoz, and of Californian plants from Prof. W. Luttrell Rogers, of the Class

of '84. A dozen of Zeiss's microscopes, and a set of Kny's botanical charts have been purchased.

The Museum of Historic Art.

The central portion of the new Museum has been completed, with the exception of the internal finish of the upper story. The Trumbull-Prime collection of pottery and porcelain, as well as several smaller collections of antiquities have been received and are being arranged. During the past year the Museum has received the following gifts: from the Perth Amboy Terra Cotta Co., a reproduction in terra cotta of the eastern frieze of the Parthenon; from the Woman's Union Missionary Society, a marble statue, the "Agnus Dei" by Steinhausen; and from Mrs. Norris, the "Culprit Fay" by Jackson.

LABORATORIES AND APPARATUS.

Physical Laboratory and Apparatus.

The physical laboratory is fitted up with tables and other arrangements to accommodate about twenty students at once. Besides the appliances usually employed in lecture demonstrations, the cabinet of apparatus contains all the instruments of precision required in the experimental courses.

The following deserve especial mention:—A fine balance by Becker, sensitive to one milligramme under a load of twenty kilogrammes. A short beam balance. A cathetometer (Grunow), with scale of one metre. A dividing engine and comparator (Rogers). A cylinder chronograph, for all time observations in the laboratory, in electrical communication with the standard clock of the astronomical observatory. A diapason chronograph (Koenig), for minute intervals of time. A spectrometer (Fauth) with 18-inch circle, reading by microscope to single seconds. Ditto (Grunow), with smaller circle, reading to 10″. A number of diffraction gratings (Rutherford and Rowland). A large spectroscope, with dispersive power of twelve prisms (Browning). Sir William Thomson's absolute, quadrant and portable electrometers (White). Two of Sir

William Thomson's ampere-balances. Lippmann's capillary electrometer. Sets of accurate resistance coils, and standard condensers. A large number of galvanometers suited to the different requirements of the laboratory. Sets of standard thermometers; apparatus for calorimetric inquiries; photometers, etc.

Chemical Laboratories.

The laboratory and cabinets of the department of General Chemistry are fully equipped for the illustration of the courses in the two branches of general and applied chemistry.

There is a large laboratory for the department of Analytical Chemistry, and connected with this are the Professor's and Assistant's rooms, acid room, weighing room and store room, provided with the best appliances. There is also an assay laboratory, with crucible and muffle furnaces. These laboratories are all in the School of Science building, and each student has a desk for his own use, with cupboards and drawers in which he can lock up such apparatus as is supplied to him individually.

Mineralogical Laboratory and Collection of the School of Science.

The laboratory contains desk-room for fifty students. Each desk is fitted with gas connections for blowpipe work in determinative mineralogy, and contains a locked drawer for the student's apparatus.

There are three cabinets of minerals. The principal one contains over five thousand specimens, embracing nearly every mineral species. Two smaller cabinets, one with labeled and the other with unlabeled minerals, are provided for practice with the classes, and to these two cabinets the students have free access.

There is also a collection of 240 specimens of typical rocks; together with a large number of Fuess's rock sections, as well as sections from other sources, for the study of lithology.

The laboratory is provided also with section cutters, grinding lathes, and other appliances for the special study of minerals and rocks; including a complete Groth's polarizing apparatus with goniometer, a large Babinet goniometer, Norremberg's polarizing apparatus, Rosenbusch's microscope, and minor apparatus.

Histological Laboratory.

This laboratory is situated on the upper floor of the west wing of Nassau Hall. It is fitted to accommodate twenty-two students at a time, each of whom is provided with the requisite instruments, reagents and staining fluids for the study of the various tissues. The microscopes have been selected with a view to convenience in practical work. A large private collection of slides, illustrating the general subject of histology, is also placed at the disposal of the students, as well as books of reference and American and foreign publications. The laboratory is open at all hours to its regular students.

The Class of 1877 Biological Laboratory.

This building is situated at the east end of Dickinson Hall. It was presented to the College by the Alumni of the Class of 1877 at their decennial reunion. It is designed for the advanced practical and experimental courses in anatomy, embryology, and physiological psychology. The main morphological laboratory, upon the second floor, will be equipped for the instruction of undergraduate students, with a private room adjoining for the instructors in charge. The first floor comprises the embryological laboratory, intended for the use of University students engaged in research, and is in charge of the Class of 1877 Fellow in Biology; also the psychological laboratory for instruction and experimental work in physiological psychology; also the laboratory library. The basement is designed for aquaria. The laboratory will be open to students during the day and in the evening, subject to special regulation.

ASTRONOMICAL OBSERVATORIES.

The Halsted Observatory.

This is appropriated to scientific work, chiefly in the department of astronomical physics. The building is of stone, with an iron dome, 39 feet in diameter. The power for moving the dome and its sliding shutter is furnished by a gas engine. The principal instrument is the great equatorial of 23 inches aperture and 30 feet focal length, made by the Clarks of Cambridge. It is provided with all the usual micrometers, spectroscopes and other accessories on a scale

proportional to the instrument. The building contains also two clocks and a chronograph.

The Observatory of Instruction.

This establishment is devoted entirely to the use of students, and is fully equipped for its purpose. It possesses an equatorial (by Clark) of 9½ inches aperture, with a full complement of spectroscopic and other accessories. It has also a 9-inch reflector; a meridian circle with telescope 4 inches in diameter; two transit instruments with 3-inch telescopes, both of them arranged for use as zenith telescopes; a 3-inch prime-vertical instrument; a chronograph; two standard clocks, and two chronometers. There are also a number of sextants, and all the other subsidiary apparatus required for carrying out the work detailed on page 43.

GYMNASIUM.

The gymnasium was built in 1869 by Mr. Robert Bonner and Mr. Henry G. Marquand. It is thoroughly equipped with all the apparatus necessary for a complete physical training. It has hot and cold shower and plunge baths, dressing rooms, bowling alleys, and besides the main hall, a room for base ball practice. There is also a gallery for visitors. The gymnasium is open from 7 to 8 A. M., 12 M. to 1:30 P. M., 5 to 6:30 P. M., on every day except Saturday, when it is open from 12 M. to 6:30 P. M. During the second term exercise in the gymnasium is required of all members of the Sophomore and Freshman classes, three times a week; the remainder of the year attendance is optional. Classes in the use of Indian clubs and calisthenics are held every day during the noon and afternoon hours. These exercises are adapted to all grades of strength, and are such as to maintain and improve in health all who take part in them, health being the primary and strength the secondary object of exercise. Special exercise on the various apparatus is under the personal supervision of the Superintendent, who is also at the command of any student for advice in regard to physical development and the laws of health. During the fall term there is an outdoor athletic meeting for prizes; in the spring term a gymnastic contest also for prizes, and at Commencement a gymnastic exhibition.

GENERAL COLLEGE ORDERS.

TERMS AND VACATIONS.

The year is divided into two terms of eighteen weeks each.

The first term of the present College year (1889–90) began on Wednesday, the 18th of September, 1889, and ends on Wednesday, the 4th of February, 1890. The second term begins on Thursday, the 5th of February, 1890, and ends on Wednesday, the 11th of June, 1890, the day of the Annual Commencement.

Students are required to return to College on the first day of each term, and absence from any College exercise at the beginning of a term counts double.

Students are not allowed to leave College during term-time without express permission obtained from the Faculty or from the officer of the class to which they belong.

COMMENCEMENT EXERCISES.

THE ANNUAL COMMENCEMENT takes place on Wednesday preceding the last Wednesday but one in June.

THE BACCALAUREATE SERMON of the President to the graduating class is delivered in the College chapel on the Sunday preceding Commencement.

The Class Day exercises of the graduating class, and the Junior oratorical contest are held on Monday preceding Commencement. The reading of theses by the graduating class of the School of Science, the annual meetings of the Literary Societies, the annual meeting of the Alumni Association of Nassau Hall, and the Lynde prize debate are held on Tuesday.

PUBLIC WORSHIP.

Prayers are offered in the Marquand chapel every week-day morning.

Divine service, under the superintendence of the President, is held in the Marquand chapel, on Sunday, at 11 o'clock, A. M.

The service is conducted, alternately, by the Dean and some one of the clerical members of the Faculty.

Religious services are held in the chapel every Sunday afternoon at 5 o'clock.

Permission to attend divine service elsewhere than in the chapel, on special occasions, is granted on application to the President. For permission to attend regularly one of the churches of the town on Sunday morning, a written request from the parent or guardian of the applicant must be presented to the President.

RELIGIOUS INSTRUCTION.

Biblical instruction is given during the week, as follows:

To the Senior class by the President: The epistles of St. Paul.

To the Junior class by the Dean: The development of doctrine in the Gospels.

To the Sophomore Academic class by Professor Ormond: The Book of Acts; by Professor Winans: St. Luke's Gospel.

To the Freshman Academic class by Professors Hunt and Orris: General introduction to the study of the Scriptures, the Poetical Books of the Old Testament, the Parables of Our Lord; also, New Testament Greek.

To the Freshman and Sophomore classes in the School of Science by Professor Macloskie: Typology of the Old Testament and the Life of Christ.

ATTENDANCE UPON COLLEGE EXERCISES.

The several classes ordinarily attend three recitations or lectures every day, except Saturday, when there are but two College exercises.

Every undergraduate student is required to attend all College exercises in the chapel, to be present during the lectures and recitations of his class, and is expected to avail himself of the privileges of the library and gymnasium upon the conditions and at the hours appointed.

Each student is allowed a certain limited number of absences from chapel and recitations during the term. When a student's

absences exceed this gratuity they are charged against his gratuity for the next term, or otherwise dealt with by such discipline as the Faculty may direct.

CHARITABLE FUNDS.

THE RICHARDS FUND.—A bequest by Mrs. Esther Richards, of New York, amounting to $2,970.32, for the benefit of candidates for the ministry. Received in 1790.

THE LESLIE FUND.—A bequest of James Leslie, of New York, a graduate of the class of 1759, amounting to $10,677.49, for "the education of poor and pious youth with a view to the ministry of the Gospel in the Presbyterian Church." Received in 1792.

THE HODGE FUND.—A bequest of Hugh Hodge, of Philadelphia, of a house and lot on Market street, above Second (No. 205), "to be held by the Trustees in trust, to lease out from time to time, and the rents to be applied to the support and education of pious youth for the ministry." Received in 1805. The net income for the current year will amount to about $750.

THE VANARSDALE FUND.—A bequest of Robert VanArsdale, of Newark, N. J., of the class of 1826, amounting to $8,000, "in trust for promoting charitable instruction in the College of New Jersey, according to the discretion of the Faculty." Received in 1875.

ENDOWED SCHOLARSHIPS.

1–3. The COLT Scholarships, founded by Roswell Colt, of Paterson, N. J.,	$3000
4. The NEWKIRK Scholarship, founded by Matthew Newkirk, of Philadelphia,	1000
5. The JOHN JOSEPH RANKIN Memorial Scholarship, founded by his father, Wm. Rankin, of Newark, N. J.,	1000
6. The CRESWELL Scholarship, founded by A. Creswell, of Kishacoquillas, Pa.,	1000
7. The ISAAC R. RANKIN Scholarship, founded by Isaac R. Rankin, of Newark, N. J.,	1000
8. The MUSGRAVE Scholarship, founded by Rev. George W. Musgrave, D.D.,	1000
9. The COGSWELL Scholarship, founded by Rev. Jonathan Cogswell, D.D.,	1000

10. The GREEN Scholarship,
founded by Hon. Henry W. Green, LL.D., 1000
11–15. The LENOX Scholarships,
founded by James Lenox, of New York, 5000
16. The HODGE Scholarship,
founded by Dr. Hugh L. Hodge, of Philadelphia, 1000
17. The A. B. BAYLISS Scholarship,
founded by A. B. Bayliss, of Brooklyn, 1000
18. The HENRY J. VAN DYKE Scholarship,
founded by George L. Sampson, of Brooklyn, 1000
19. The GREGORY Scholarship,
founded by Dudley S. Gregory, of Jersey City, 1000
20. The FIRST PRESBYTERIAN CHURCH OF PEEKSKILL
Scholarship, founded by members of the Church, 1000
21. The VAN VORST Scholarship,
founded by Hon. John Van Vorst, of Jersey City, 1000
22. The JANEWAY Scholarship,
founded by the Rev. Jacob J. Janeway, D.D., 1000
23. The PRESBYTERIAN CHURCH OF HUNTINGTON, L.I.,
Scholarship, founded by the ladies of the Church, 1000
24. The BACKUS Scholarship,
founded by E. F. Backus, of Philadelphia, 1000
25. The VAN SINDEREN Memorial Scholarship,
founded by Mrs. and Miss Van Sinderen, of Brooklyn, 1000
26. The NORRIS HALSTED Scholarship,
founded by Gen. N. Norris Halsted, of Newark, N. J., 1000
27. The MACLEAN Scholarship,
founded by Drs. John and George M. Maclean, 1000
28. The HAINES Scholarship,
founded by Richard T. Haines, of Elizabeth, N. J., 1000
29. The JACKSON Scholarship,
founded by Hon. John P. Jackson, of Newark, N. J., 1000
30. The TUTTLE Scholarship,
founded by Joseph N. Tuttle, of Newark, N. J. 1000
31. The GERTRUDE N. WOODHULL Memorial Scholarship,
founded by her son, Dr. John N. Woodhull, of Princeton, 1000
32. The NATHANIEL W. TOWNSEND Memorial Scholarship,
founded by his daughter, Mrs. Daniel Haines, 1000
33. The FIRST PRESBYTERIAN CHURCH OF BRIDGETON
Scholarship, founded by members of the Church, 1000
34. The SKIDMORE Scholarship,
founded by Joseph P. Skidmore, of New York, 1000
35. The SPENCER Scholarship,
founded by L. S. Spencer, 1000
36. The JEREMIAH D. LALOR Memorial Scholarship,
founded by a friend, 1000

37. The MARQUAND Scholarship,
founded by Frederick Marquand, of Southport, Conn., 1000
38. The FIRST PRESBYTERIAN CHURCH OF TRENTON
Scholarship, founded by members of the Church, 1000
39. The CAMERON Scholarship,
founded by Hons. Simon and Donald Cameron, 1000
40. The SECOND PRESBYTERIAN CHURCH OF ELIZABETH
Scholarship, founded by members of the Church, 1000
41. The C. S. BAYLISS Scholarship,
founded by Charles S. Bayliss, of Brooklyn, 1000
42. The ELIZA MUSGRAVE GIGER Memorial Scholarship,
founded by her son, Prof. George M. Giger, D.D., 1000
43. The BLAIR Scholarship,
founded by James Blair, of Scranton, Pa., 1000
44. The PENNINGTON Scholarship,
founded by Dr. Samuel H. Pennington, of Newark, N. J., 1000
45. The FENTON Scholarship,
founded by Aaron Fenton, 1000
46. The TRASK Scholarship,
founded by Alanson Trask, of Brooklyn, 1000
47. The WITHINGTON Scholarship,
founded by Chandler Withington, of Kingston, N. J., 1000
48. The NEWARK Scholarship,
founded by the will of Henry Rogers, of Newark, N. J., 1000
49. The CARTER Scholarship,
founded by Aaron Carter, of Newark, N. J., 1000
50–54. The HOLMES Scholarships,
founded by Capt. Silas Holmes, of New York, 5000
55. The COLWELL Scholarship,
founded by Stephen Colwell, of Philadelphia, 1000
56. The AITKEN Scholarship,
founded by John Aitken, of New York, 1000
57. The BULLARD Scholarship,
founded by Mrs. P. Bullard, 1000
58. The CHARLES DICKINSON HAMILL Memorial Scholarship,
founded by his father, the Rev. Samuel M. Hamill, D.D., 1000
59. The CYRENIUS BEERS Memorial Scholarship,
founded by his daughter, Miss Julia Beers, 1000
60. The JACOBUS Scholarship,
founded by Peter Jacobus, of Newark, N. J., 1000
61. The MATTHEW B. HOPE Scholarship,
founded by the Trustees as an acknowledgment of the services of Prof. Hope in raising an endowment of over $100,000. 1000
62. The JOHN MACLEAN Scholarship,
founded by a friend of President Maclean, 1000
63. The WHITE Scholarship,
founded by William White, Esq., 1000

64. The ELIZABETH VAN CLEVE Scholarship, founded by the Hon. C. S. Green, of Trenton, N. J., 2000
65. The BLOOMFIELD Scholarship, founded by the Hon. Amzi Dodd, of Bloomfield, N. J., 1000
66. The FLAGLER Scholarship Fund, the gift of Henry M. Flagler, of New York City, 1500
67. The JAMES MCCOSH Scholarship, founded by friends of President McCosh in N. Y. City, 1000
68–69. The WISTAR MORRIS WOOD and CHARLES MORRIS WOOD Scholarships, founded by their father, the Rev. Chas. Wood, D.D., of Germantown, Pa., 2000
70. The CLASS OF 1856 Scholarship, founded by members of the Class of '56, 1000
71. The CLASS OF 1841 Scholarship, founded by members of the Class of '41, 1000
72. The ALBERT DOD BROWN Memorial Scholarship, founded by his mother, Mrs. Susan D. Brown, of Princeton, N. J., 1000
73–77. The JONATHAN DICKINSON Scholarship,
The AARON BURR Scholarship,
The JONATHAN EDWARDS Scholarship,
The SAMUEL DAVIES Scholarship,
The SAMUEL FINLEY Scholarship,
founded by a friend of the College, 5000
78. The A. O. HEADLEY Scholarship, founded by A. O. Headley, Esq., of Newark, N. J., 1000

The above Scholarships are for the benefit of students in the Academic Department, with the exception of the ELIZABETH VAN CLEVE Scholarship, which may be assigned to a student in the School of Science.

About sixty Scholarships were founded between the years 1853 and 1858, mainly through the efforts of President Maclean and Professor Hope. The last fifteen were founded since the beginning of the Academic year 1885–6.

PECUNIARY AID.

The College has for many years remitted, on application, the tuition of candidates for the ministry, of the sons of ministers and also of other applicants who present satisfactory testimonials of good moral character and of more than ordinary intellectual ability, with the assurance that the aid requested is absolutely needed. No candidate for admission to College who is unexceptionable morally

and intellectually will be refused admission because of inability to pay the charge for tuition.

In consequence of this liberal policy the amount of tuition remitted has increased until it is now more than double the entire income from the scholarship and charitable funds. If this policy is to be continued a large increase of these funds is urgently demanded. The Trustees have accordingly appointed a joint committee of members of the Board of Trustees and of the Faculty, to increase the Scholarship Fund to $150,000. *This effort is commended to the attention and favor of the Alumni and other friends of the college.*

Although the charge for tuition, since the first scholarships were founded, has been advanced from $60 to $100, scholarships in the Academic department for the benefit of *candidates for the ministry, sons of ministers, or other students needing assistance*, may be founded by the payment of $1000,—the scholarship to be designated as the donor may direct.

Scholarships may be founded by the payment of $1,000, and designated as the donor may direct, the income from which will be accepted as payment of the tuition in the Academic department of *any student* to whom the donor may assign it, for *four years*—to be subsequently assignable by the Faculty.

Application for scholarships, or for aid from the charitable funds, should be made to Professor J. T. Duffield.

EXPENSES.

The following is the Schedule of the College expenses for 1889–1890.

Board, 36 weeks	$ 3.00 to $7 per week.
Washing, 36 weeks	50 cents per week.
Tuition, Academic	100.00 per annum.
Tuition, School of Science	120.00 per annum.
Tuition, Special course in Analytical Chemistry	120.00 per annum.
Tuition, extra for Laboratory Chemistry, Senior elective	18.00 per annum.
Room rent (according to location of rooms)	30.00 to $175 per annum.
Fuel deposit (according to location of rooms)	17.00 to $26 per annum.
Gas deposit (according to location of rooms)	24.00 to $42 per annum.
Servants and Public Rooms (Library, Gymnasium, Museums, etc.)	40.00 per annum.
Matriculation Fee, payable on entrance	5.00
Graduation Fee, payable third term, Senior year	12.00

For other special courses than that in Analytical Chemistry arrangements may be made upon consultation with the Professor in charge.

The charges for fuel and gas are approximations based upon the greatest amount used. An account of the actual consumption is kept with each room, and the exact charge is adjusted at the end of the year. The charge for fuel includes the cost of kindling, and the labor of carrying coal, making fires, etc.

Apparatus Deposits.—Students pursuing certain courses in the School of Science are required to make deposits to pay for apparatus injured or destroyed. At the end of the term any excess in favor of the student is placed to his credit on the bill for next session. The deposits in the courses for B.S. are:—Sophomores, first term, $12; second term, $12; Juniors taking any work in chemical analysis, second term, $12; Seniors electing the course in Chemistry and Mineralogy, first term, $15; second term, $10; other Seniors taking any work in chemical analysis, first term, $12. The deposits in the course for C.E., all payable in the first term, are:—Freshmen, $3; Juniors, $6; Seniors, $4; all of the foregoing being for apparatus in the Engineering Department; also, Sophomores, $5 for the Engineering Department, and $12 for blowpipe apparatus. Academic Seniors, electing Laboratory Chemistry, will deposit $5, payable in the first term.

ESTIMATES OF ANNUAL EXPENSES.

ACADEMIC DEPARTMENT.

Attention is specially called to the following approximate estimate of the necessary annual expenses for a student occupying an unfurnished room in College, without including clothes, travelling or vacation expenses:

	Min.	Medium	Max.
Board, 36 weeks, at $3.00 to $7.00	$108.00	$180.00	$252.00
Washing, 36 weeks, at 50 cents per week	18.00	18.00	18.00
Tuition and Public Room Fees	140.00	140.00	140.00
Matriculation Fee (on Entrance)	5.00	5.00	5.00
Room Rent	30.00	60.00	175.00
Fuel	10.00	20.00	30.00
Gas		10.00	25.00
Total	$311.00	$433.00	$645.00
Deduct for Students on Scholarships	100.00		
See page 140.			
	$211.00		
Approved Candidates for Ministry	30.00		
	$181.00		

College Bills.

All College expenses, including board and washing, must be paid in advance to the Treasurer of the College.

Students are required to call at the Treasurer's office in the course of the first ten days of each session, and to give information as to their place of boarding, etc., so that their bills can be made out. All bills must be paid within the first four weeks of the session. Failure to comply with this rule will deprive the student of the privileges of the College until payment is made, unless excused by special vote of the Faculty.

When a student enters College before the middle of the session, he shall pay in full the usual College charges for that session, with the exception of the charges for board and washing; if he enter after the middle of the session, he shall pay one-half. For board and washing he shall pay in proportion to the time.

When a student leaves the College, whether voluntarily or by dismission, before the middle of any session, one-half of the charges for tuition and public rooms for that session shall be refunded. But in the case of temporary absence and subsequent return, although the absence be for more than half a session, no such rebate shall be granted.

When a student is dismissed from College for any cause, the advance deposit for board, washing, fuel and gas, beyond the time of his dismission, shall be refunded to his parent or guardian.

When at the end of the first session the amount of the advance deposit proves to be in excess of the sum required to defray the board, washing or room bills of any student, the excess shall be credited on his bill for the next session. At the end of the College year the amounts overpaid by the members of the *graduating class* for board, washing, room rent, fuel, or gas shall be refunded by the Treasurer to the student's parent or guardian. The parent or guardian of *all undergraduates* will be advised of the amount of excess to the credit of his son or ward, and such amount will be *carried over to his credit on the bill of the first session of the following year.* In case of withdrawal or dismissal from College of any undergraduate, at the end of the College year such excess will be refunded by the Treasurer to the parent or guardian, when informed by the Clerk

of the Faculty that such undergraduate has been withdrawn or dismissed from College.

RULES RESPECTING RENTAL AND ALLOTMENT OF ROOMS.

(*a*) Exchange of rooms can be made only by students occupying College rooms. (See rule 12.)

(*b*) Buying furniture does not give purchaser a right to a room. (See rule 14.)

(*c*) Furniture in a room can be bought or sold—not the room. (See rule 14.)

(*d*) Exchanges are not transfers, and no transfers are allowed. (See rule 13.)

(*e*) Students who room in town and purchase furniture in College rooms cannot have the rooms transferred directly to them—the rooms must go through "drawing." (See rule 14.)

1. Whenever a student desires to occupy a room in one of the College buildings, he and his parent or guardian shall be required to sign a room-agreement, engaging to pay the rent and charges of said room for the ensuing Academic year, or for the remainder of the current year, as the case may be.

2. The tenure of all rooms so engaged shall be subject to the following conditions as regards damages and repairs, viz.: (1.) All damage done to a room beyond the ordinary wear and tear, shall be made good as soon as possible at the expense of the occupant. *This provision includes the breakage of glass whether by accident or design.* The occupant shall employ the proper College workmen and pay the cost of the repairs at once to the Treasurer. (2.) The occupants of a room shall deposit with the Curator the sum of twenty-five cents for every key furnished, which amount shall be refunded on return of the keys.

3. Students now occupying rooms, or to whom rooms shall hereafter be allotted, may have the option of retaining such rooms until the end of their College course, on condition of annually notifying the Treasurer of their intention of retaining their rooms for the following year, and signing a new room-agreement before

May 15th; otherwise their rooms will be considered as vacated, and will be included in the annual allotment.

4. In the annual room-drawing, rooms shall be drawn only by the *bona fide* intending occupant. In case of absence through sickness, of any such intending occupant, a proxy duly authorized, in writing, may act in his stead. The student so drawing a room, either in person or by proxy, will be held for the rent of such room for the entire ensuing year unless released by the proper authority.

5. Rooms becoming vacant at or near the close of the College year shall be assigned to new occupants, by lot. The members of the Junior and Sophomore classes who desire a choice shall draw lots first; then, the Freshmen. As soon as the drawing is completed the rooms must at once be selected in order of priority of choice.

6. No student will be entitled to the room allotted him unless the room-agreement shall have been signed and returned to the Treasurer before June 5th.

7. New students shall have the choice of any remaining rooms in the order of their application, after admission into College, on condition of immediately signing the room-agreement, and depositing with the Treasurer the rent for the next ensuing term.

8. Every student who draws or retains a room is expected to occupy the same, and pay the rent and charges, or his share thereof, until the end of the College year, unless sooner released by the proper authority.

9. A student who expects to be absent on leave for a term may be released from the above obligation, by notifying the Treasurer before the beginning of the term, and by giving up the room; but no abatement or drawback for room rent will be made to any student vacating his room during a term, unless by express direction of the Faculty.

10. Whenever, by any contingency, one of two room-mates is permitted or obliged to cancel his room-agreement, the remaining occupant must vacate the room at the end of the current term, unless he agrees to pay the whole rent, or provides a room-mate who shall join him in signing a new agreement for the remainder of the College year. When one of two occupants of a room is a member of the

Senior class, the room shall become vacant when the Senior graduates, and be subject to the provisions of Rule 5, except in cases where the joint occupancy has continued for at least one year.

11. When rooms are vacated during the first term the rent shall be paid to the end of the term (see Rule 9), at which time the students who may have registered their names as applicants for vacancies shall draw for them by lot.

12. Exchange of rooms, or substitution of one occupant for another, must be by authority of the Treasurer, and any student moving into a room, without authority previously obtained, will be liable to a fine of $10, and be required to vacate the room. Such exchanges can only be made at the end of the first term, or the first three days of the second term.

13. When a Senior and an underclassman desiring to exchange rooms shall have observed all the regulations respecting such changes, if satisfactory to the underclassman and his parent or guardian, the Senior may be allowed to retain his room until the end of the College year, provided the parent or guardian of such underclassman shall have signified his assent in writing to the Treasurer.

14. No tenant of a College room who is permitted or compelled to vacate such room will be allowed to transfer directly or indirectly any interest in or title to the room.

15. When a student vacates a room he shall immediately remove the furniture therefrom unless the student to whom the room is assigned elects to purchase the same. In case a sale is agreed upon between the parties, the price to be paid by the purchaser shall be ascertained by deducting from the cost price of the furniture a discount of twenty per cent. per annum for the time the same has been in use by the vendor; provided that the price to be paid for the furniture in a room shall in no case exceed $200. All sales shall be approved by the Treasurer before the same are finally consummated.

16. Students leaving College, or otherwise vacating their rooms, shall be allowed to store their furniture in a room assigned by the College authorities, under the charge of a salesman appointed by the College, where it may be offered for sale. Furniture remaining unsold at the end of three months, if not removed by the owner, will be disposed of at public auction to the highest bidder.

STUDENTS OF THE COLLEGE.

RESIDENT GRADUATE STUDENTS.

N. B.—Fellows are not included in the following list.

Henry Osgood Aiken, A.B.,	Dartmouth,	Amherst, N. H.
William Alexander Annin, A.M.,	Princeton,	Rolla, Mo.
William Crittenden Axer,		Pocomoke City, Md.
William Sullivan Bannerman,	Univ. Coll. Toronto,	Chesley, Ont.
Henry Coleman Baskerville, A.B.,	Univ. of Ga.,	Broken Bow, Neb.
Robert H. Beattie, A.M.,	Princeton,	Salisbury Mills, N. Y.
George Titus Berry, A.B.,	Princeton,	Caldwell, N. J.
Charles Newbold Black, A.B.,	Princeton,	New York City.
Frank Fenton Blessing, A.B.,	Union,	Albany, N. Y.
John Calhoun, A.B.,	Princeton,	Connellsville, Pa.
Leroy Learned Cameron, A.B.,	Union,	Albany, N. Y.
Sidney Seabury Conger,		Summit, N. J.
Hector William Cowan, A.B.,	Princeton,	Hobart, N. Y.
Harry Hosick Crawford, A.B.,	Geneva,	Washington, Ia.
Winthrop More Daniels, A.B.,	Princeton,	Dayton, O.
Charles Edgar Davis, A.M.,	Princeton,	Hightstown, N. J.
James Walter Doughty, A.B.,	Princeton,	Circleville, O.
William Edward Durell, A.B.,	Princeton,	Woodstown, N. J.
Charles Earle,		New York City.
Joseph Nicholl Elliott, A.B.,	Univ. of Toronto,	Princeton, N. J.
Carl George Hans Ettlich,	N. Y. Univ.,	Jersey City, N. J.
Albert Evans, A.B.,	Hamilton,	Rome, N. Y.
Sterling Johnston Foster, Jr., A.B.,	S. W. Pres. Univ.,	Union Springs, Ala.
Donald Fraser, A.B.,	Dalhousie,	Pictou, N. S.
Frank Leonard Fraser, A.B.,	Manitoba,	Morden, Man.

Fenwick William Fraser, A.B., St. Francis Xavier, Antigonish, N. S.
Horace Nutman Freeman, Orange High Sch., Orange Valley, N. J.
Llewellyn Stover Fulmer, A.B., Princeton, Philadelphia, Pa.
William James George, A.B., Princeton, Lawrenceville, N. J.
William Futhey Gibbons, Bucknell, West Chester, Pa.
Mark Brown Grier, A.B., Erskine, Due West, S. C.
John Griffith, Trevecca, Wales, Owen Sound, Ont.
William Oscar Groce, A.B., Tallapoosa, Greenville, S. C.
George McLean Harper, A.B., Princeton, Princeton, N. J.
Wilbur Lafayette Hayes, A.B., Blackburn, Litchfield, Ill.
Charles Sumner Hedges, A.B., Lincoln, Baltimore, Md.
Edward Ringwood Hewitt, A.B., Princeton, New York City.
Richard Morse Hodge, A.M., Princeton, Hartford, Conn.
Samuel Colgate Hodge, A.B., Princeton, Hartford, Conn.
William Cunningham Humphreys, A.B., Columbia, Brooklyn, L. I.
Robert Scott Inglis, A.B., Wash. and Jeff., Claysville, Pa.
Frederick Wolcott Jackson, C.E., Princeton, Newark, N. J.
Daniel Edward Jenkins, A.M., Melbourne Univ., Melbourne, Australia.
Daniel Cothi Jones, Trevecca, Wales, Cwot, Wales.
Livingston F. Jones, Tuckerton, N. J.
George Sloman Ketchum, Crozier Theol. Sem., Philadelphia, Pa.
Frank Lambader, Jr., LL.B., Univ. of Penn., Philadelphia, Pa.
James Charles Levingood, Auburn Theol. Sem., Honeybrook, Pa.
Frank McAfee, Harvard, Port Royal, Pa.
Archibald Hugh McArn, Davidson, Laurinburg, N. C.
John Berridge McCuish, A.M., Park, Loch Lomond, Pa.
George MacLeod, Dalhousie, Princeton, N. J.
John McMillan, Magee, Londonderry, Ont.
John Kinnion McGillivray, A.B., Manitoba, Port Elgin, Ont.
James Thomas McLean, A.B., Park, Princeton, N. J.
George Bishop MacLeod, A.B., Dalhousie, Murray River, P. E. I.
James R. Mann, A.B., Univ. Coll., Toronto, Baltimore, Md.
Joseph Edgar Maxwell, A.B., Princeton, Millersburg, O.
Wilbur Clayton Mickey, A.B., Wooster, Princeton, N. J.
Dayton Clarence Miller, Ph.B., A.M., Baldwin, Berea, O.
Thomas Maxwell Morrison, A.B., Lafayette, Avondale, Pa.

Fred Neher, A.B.,	Princeton,	Troy, N. Y.
Henry Irwin Nicholas,		Santie, Pa.
Samuel John Onque, A.B.,	Lincoln,	Princeton, N. J.
Maurice Oudin, A.B.,	Coll. City N. Y.,	New York City.
DeWitt Lincoln Pelton, A.B.,	Coe,	Cedar Rapids, Ia.
Frederick Perkins, A.B.,	Hamilton,	Lock Haven, Pa.
William Salter Porter, A.B.,	Univ. of Pa.,	Media, Pa.
Mason Pressly,	Erskine,	Princeton, N. J.
Edward Watson Rand, A.B.,	Princeton,	Baltimore, Md.
William Rankin, A.B.,	Princeton,	Newark, N. J.
Carl Herman Reinsberg,	Niesky, Silesia,	Salem, N. Y.
Howard Steel Rogers, B.S.,	Cincinnati,	Covington, Ky.
William Starritt Rutherford,	Queen's, Belfast,	Princeton, N. J.
Robert H. Sharpe,	Wooster,	Newville, Pa.
William Ambrose Shedd, A.B.,	Marietta,	Oroomiah, Persia.
William Orpheus Shewmaker, A.B.,	Central Univ.,	Harrodsburg, Ky.
Robert Colin Hoodock Sinclair, A.B.,	Queen's,	Kingston, Ont., Carleton Place, Ont.
John Snodgrass,	Edinburgh Univ.,	Scotland.
Walter Lee Stewart, A.B.,	S. W. Pres. Univ.,	Natchez, Miss.
Duncan Warren Taylor, A.B.,	Princeton,	Princeton, N. J.
William Craig Templeton,	Park,	Pinkneyville, Ill.
William McCulloch Thompson,	Queen's, Kingston, Ont.,	Durham, N. S.
John Alvin Terhune, A.B.,	Princeton,	Saddle River, N. J.
Archibald Thompson,	Victoria Univ.,	Coldspring, Ont.
Edward Waite Thwing,	N. Y. Univ.,	Brooklyn, N. Y.
Charles F. Uebelacker,	Princeton,	Morristown, N. J.
Charles Grover Vardell, A.B.,	Davidson,	Summerville, S. C.
John Milligan Waddell, A.B.,	Princeton,	Princeton, Ill.
Ellwood O. Wagenhurst, A.B.,	Princeton,	Clifton, Pa.
Lucien Waggener, A.B.,	Princeton,	Frankfort, Ky.
Daniel Ruby Warren,	Normal School,	Trenton, Baptistown, N. J.
Walter Henry Waygood, A.B.,	Lafayette,	Albany, N. Y.
Frank Stiles Woodruff, A.M.,	Princeton,	Elizabeth, N. J.
Myron Thomas Wright, A.B.,	Baldwin,	Berea, O.
John Newton Young, A.B.,	Park,	Mound City, Mo.

NON-RESIDENT GRADUATE STUDENTS.

Arnold Guyot Cameron, A.M.,	Princeton,	Oxford, O.
Wallace Torrey Chapin, A.B.,	Amherst,	Hyde Park, Ill.
William Mann Irvine, A.B.,	Princeton,	Lancaster, Pa.
Mark Harvey Liddell, A.B.,	Princeton,	Germantown, Pa.
John Stevens Parker, A.B.,	Princeton,	Beverly, N. J.
Ralph Earl Prime, A.B.,	Princeton,	Yonkers, N. Y.
William Andrew Robinson, A.M.,	Princeton,	South Bethlehem, Pa.
Frederick Newman Rutan, A.B.,	Princeton,	Newark, N. J.
Mills Whittlesey, A.M.,	Rochester,	Lawrenceville, N. J.

GRADUATE STUDENTS, ... 105

UNDERGRADUATES IN ACADEMIC DEPARTMENT.

SENIOR CLASS.

Benjamin Haywood Adams,	Elizabeth, N. J.,	3 N R H
Henry Martyn Alexander, Jr.,	New York City,	6 S E
Knowlton Lyman Ames,	Chicago, Ill.,	8 U H
Frank Seitz Anthony,	Springfield, O.,	13 S W
Alfred Stubbs Baker,	Princeton, N. J.,	Trinity Rectory
James McClure Barnett,	New Bloomfield, Pa.,	31 U H
Edgworth Bird Baxter,	Sparta, Ga.,	18 N W
George Green Belt,	Cedar Rapids, Iowa,	35–36 U H
Charles Goodwin Bickham,	Dayton, Ohio,	16 N W
George Hooper Bigelow,	San Francisco, Cal.,	40 N E H
John Warren Bird,	Trenton, N. J.,	9 N W H
Clinton Ledyard Blair,	Belvidere, N. J.,	16 E W H
Ernest Ludlow Bogart,	Yonkers, N. Y.,	15 S E
John Bright,	Pottsville, Pa.,	34 S E H
Thomas Brown, Jr.,	Princeton, N. J.,	Mr. Brown's
John Calvin Bucher,	Dillsburg, Pa.,	24 N
Edward Phillips Burgess, Jr.,	Dedham, Mass.,	6 N W
Campbell Sheldon Carothers,	Greason, Pa.,	26 N E H
Dan Dillon Casement,	Painesville, O.,	11 W W H
Tileston Fracker Chambers,	Washington, D. C.,	18 U H
Henry Judson Chapin, Jr.,	New York City,	4 N R H
James Jeffries Charlton,	Albany, Oreg.,	13 N
Albert Ward Cobb,	Sing Sing, N. Y.,	10 W M W H
Addison Berg Collins,	Philadelphia,	5 U H
Arthur James Collins,	Sheridan, N. Y.,	19 S M R H
William Shubael Conant,	Princeton, N. J.,	14 S W
John Paul Conduit,	Nutley, N. J.,	23 N E H

George Bishop Covington,	Snow Hill, Md.,	Mrs. Warren's
Henry Kreider Denlinger,	Gordonville, Pa.,	26 N
Walter Charles Dohm,	Princeton, N. J.,	Mr. Dohm's
Warren Benyew Dunham,	Oxford, Ind.,	Mrs. Benj. Warren's.
David Linn Edsall,	Hamburg, N. J.,	2 E M W H
William Bradford Ewing,	Alexandria, Egypt,	18 S M R H
James Edward Farnam,	Media, Pa.,	9 W W H
James McCullough Farr, Jr.,	New York City,	7 S E
William Sanderson Furst,	Bellefonte, Pa.,	6 W M W H
George McFarlane Galt,	Aurora, Ill.,	28 N E H
Herbert Mortimer Gesner,	Linden, N. J.,	5 N M R H
William Dwight Gibby,	Princeton, N. J.,	Mrs. Gibby's
Malcolm Graham, Jr.,	New York City,	4 N R H
Craig Reasoner Guerin,	Morristown, N. J.,	4 E M W H
Alexander Smith Guffey,	Greensburg, Pa.,	17 and 20 S E H
John Ezra Hanon,	Morrisonville, Ill.,	Mrs. Tomlinson's
Harry Walter Haring,	Philadelphia,	22 S E H
Harlie Wallace Hathaway,	Jersey City, N. J.,	S, U H
George Edward Hersh,	York, Pa.,	U, U H
Walter Briggs Hill,	East Liverpool, O.,	8 and 10 N E H
Jacob Benner Hillegass,	Pennsburg, Pa.,	2 N R H
Jesse Watson Hirst,	Fall River, Mass.,	18 N E H
Charles Hodge,	Wilkes-Barre, Pa.,	7 S R H
Richard Irvin, Jr.,	New York City,	14 S E
Charles Huntington Jackson,	Newark, N. J.,	11 N W
Hugh Hartshorne Janeway,	New Brunswick, N. J.,	1 E W H
Alfred Thompson Kelly,	East Liverpool, O.,	8 and 10 N E H
Joseph Reynolds Kerr, Jr.,	New York City,	10 E W H
Winfield Smith Kimball,	Eatontown, N. J.,	Mrs. Warren's
David Chambers Lewis,	Portland, Oreg.,	7 N E
Joseph William Lewis, Jr.,	St. Louis, Mo.,	32 U H
Albert Elmer Linder,	Orwigsburg, Pa.,	2 N R H
Louis Eugene Livingood,	Reading, Pa.,	4 S R H
Frank Hallett Lovell, Jr.,	Brooklyn, N. Y.,	30 U H
Walter Lowrie,	Philadelphia,	14 S W
Frank Lukens,	Elizabeth, N. J.,	8 S R H
William Harvey Lytle,	Princeton, N. J.,	Dr. Lytle's
Henry Alexander McConkey,	Peach Bottom, Pa.,	13 N M R H

Robert Thompson Miller McCready,	Sewickley, Pa.,	29 N E H
Mark Lindsay McDonald, Jr.,	Santa Rosa, Cal.,	35 and 36 U H
Andrew Hartupee McKee,	Allegheny, Pa.,	3 and 4 U H
Malcolm McLaren,	Brooklyn, N. Y.,	28 S E H
James Mathers,	Mifflintown, Pa.,	E, U H
Huntington Wolcott Merchant,	New York City,	10 N M R H
Dunlop Moore, Jr.,	N. Brighton, Pa.,	Mrs. Burroughs'
Vandeveer Van Arsdale Nicholas,	Somerville, N. J.,	15 N E H
Edwin Nicodemus,	Boonsboro', Md.,	B, U H
Newton Fassett Osmer,	Franklin, Pa.,	9 N E
Francis Palmer,	Kennebunkport, Me.,	6 W M W H
Howard Winters Perrin,	Luzerne, Pa.,	5 N W
William Lee Phelps,	Springfield, O.,	7 S W
Delavan Leonard Pierson,	Philadelphia,	18 S E H
Eugene Blackburn Price,	Cincinnati, O.,	35 and 36 U H
William Cowper Prime,	Yonkers, N. Y.,	15 S E
John H. Race,	Kingston,. Pa.,	S, U H
Edmund Grindall Rawson, Jr.,	Albany, N. Y.,	1 N M R H
Albert Reid,	Englishtown, N. J.,	12 N E H
William Mapes Rysdyk,	Goshen, N. Y.,	22 N E H
James Madison Sharon,	McAlisterville, Pa.,	18 S W
George Louis Shearer,	San Francisco, Cal.,	27 N
Spencer Howell Shepard,	New York City,	3 W M W H
Robert Porter Shick,	Reading, Pa.,	12 S E
Reginald Kearney Shober,	Philadelphia,	14 N E
Arthur Melville Shrady,	New York City,	11 S W
Edwin Withers Shultz,	Kirkwood, Pa.,	19 S M R H
Lowry Witherspoon Sibbet,	Shippensburg, Pa.,	10 N
Louis Dean Speir,	South Orange, N. J.,	5 N W
Charles George Sproull,	Jacksonville, Fla.,	3 S E H
Morris Crater Sutphen,	Morristown, N. J.,	21 N E H
Joseph Holden Sutton,	New York City,	18 N W
Joseph Notley Thomas,	Santa Rosa, Cal.,	19 E W H
Robert T. Townsend,	New Brighton, Pa.,	11 S E
J. Spencer Van Cleve,	Erie, Pa.,	10 S W
James Ditmars Voorhees,	Morristown, N. J.,	11 S W
Frederick Morton Wall,	New York City,	4 S E H
Frederick John Watson,	Cairo, Egypt,	5 N E H

Grant Weidman, Jr.,	Lebanon, Pa.,	15 N W
George Silas West,	Waverly, N. Y.,	16 S E H
Clarke Benedict Williams,	Corning, N. Y.,	34 U H
Charles Albert Woods,	Sewickley, Pa.,	19–20 U H
Howard Edwin Wright,	Princeton, N. J.,	Mr. J. Wright's
John Hankins Wright,	Princeton, N. J.,	Mr. T. Wright's
John Morris Yeakle,	Norristown, Pa.,	8 S M R H

SENIORS, ... 110

JUNIOR CLASS.

John Franklin Adams,	Mount Union, Pa.,	34 N E H
Louis Bartholomew Adams,	New York City,	13 N E H
Cornelius Rea Agnew,	New York City,	8 E M W H
George Bliss Agnew,	New York City,	8 E M W H
Wilson Aull,	St. Louis, Mo.,	17 S E
Samuel Harbourne Baldwin,	Newark, N. J.,	9 S E
George Orris Bechtel,	Colora, Md.,	Mrs. E. M. Allen's
George Jeffery Bergen,	Camden, N. J.,	5 S R H
Jeremiah Sullivan Black,	York, Pa.,	17 W W H
William Bayard Blackwell,	Trenton, N. J.,	1 W M W H
Asahel P. H. Bloomer,	Indianapolis, Ind.,	9 N R H
Paul Russell Bonner,	New York City,	6 W W H
Curtis Orris Bosserman,	Newport, Pa.,	8 S E H
Willard Hall Bradford,	Dover, Del.,	Mrs. King's
William Christy Bryan,	St. Louis, Mo.,	9 W M W H
Charles Renwick Campbell,	Derry, Pa.,	10 S E H
Paul Van Ettan Cary,	Milwaukee, Wis.,	17 W W H
Willie Winfield Casselberry,	Philadelphia,	7 N R H
Lowrie Childs,	Omaha, Neb.,	D, U H
Theodore Winthrop Church,	Hudson, N. Y.,	20 S E
Ernest Bonner Cooper,	Shelbyville, Tenn.,	9 U H
Louis Burton Crane,	Mt. Sterling, Ill.,	Mrs. Atkinson's
Charles Carroll Dana,	Morrisville, N. Y.,	11 N E
Herman Stearns Davis,	Milford, Del.,	13 S E
William Leek Davison,	Brooklyn, N. Y.,	9 N E H
William Russell Deemer,	Williamsport, Pa.,	6 N R H

Claire H. Denman,	Scottsville, N. Y.,	17 N
Alfred Pearce Dennis,	Pocomoke City, Md.,	20 N E H
George Dugan,	Philadelphia,	4 S M R H
James Henry Dunham,	Trenton, N. J.,	6 S R H
Harry Lippie Durell,	Woodstown, N. J.,	17 N E
Samuel Russell Dye,	Trenton, N. J.,	18 N E
Elwood Waite Elder,	Warsaw, O.,	9 N R H
Edward Waterman Evans, Jr.,	Trenton, N. J.,	6 S R H
William Littell Everitt,	Jamesburg, N. J.,	12 N E H
Ernest Carson Gibney,	New York City,	Mr. Wortley's
Richard Francis Goldsborough,	Washington, D. C.,	Mr. Hankins'
Royal Sweetser Goldsbury,	Minneapolis, Minn.,	4 N E H
Clarence McCheyne Gordon,	Fannettsburg, Pa.,	9 S E H
Henry Woodhull Green,	Trenton, N. J.,	Mrs. Goldie's
Joseph Webb Harper,	Still Pond, Md.,	16 S E
William Post Herrick,	New York City,	7 E M W H
Erskine Hewitt,	New York City,	20 W W H
John Hone, 3d,	Red Bank, N. J.,	13 N E
John Preston Hoskins,	Media, Pa.,	Mrs. Ferguson's
Charles Fish Howell,	New Brunswick, N. J.,	2 E W H
Rowland Herbert Jackson,	Ohio, Mo.,	7 S E H
Charles Marion Jamison,	Greensburg, Pa.,	15 S M R H
David Stuart Dodge Jessup,	Beirut, Syria,	19 N W
Benjamin Franklin Jones, Jr.,	Allegheny, Pa.,	11 E W H
Pringle Carlisle Jones,	South Charleston, O.,	4 E M W H
Wistar M. Kelly,	Washington, D. C.,	Mrs. Atkinson's
Phineas Barbour Kennedy,	Bridgeton, N. J.,	16 S M R H
John Carruthers Leach,	Philadelphia,	42 S E H
Edwin Augustus Stevens Lewis,	Hoboken, N. J.,	5 W M W H
Francis Ernest Lloyd,	Philadelphia,	1 S E
Richard Bruff Lyon,	Morristown, N. J.,	5 E W H
Donald McColl,	Caledonia, N. Y.,	17 N
Glenn Ford McKinney,	Titusville, Pa.,	6 N R H
George Stewart McLean,	Shippensburg, Pa.,	9 N M R H
Charles Hodge MacMillan,	Perrineville, N. J.,	15 N M R H
Thomas Ferguson McNair,	Hazleton, Pa.,	8 N R
Hugh McNinch,	Grovania, Pa.,	32 N E H
James Alexander Matheson,	Philadelphia,	2 S E H

James Cowden Meyers,	Columbia, Pa.,	7 N R H
Homer Ramsdell Miller,	Amity, N. Y.,	4 N W
Mushegh Minas Minassian,	Constantinople, Turkey,	27 S E H
Franklin Thomas Moore,	Bridgeton, N. J.,	24 N
John Cameron Motter,	New Buffalo, Pa.,	18 S W
Archibald Gordon Murray,	New York City,	5 W W H
Benjamin Markley Nyce,	Clarksburg, Ind.,	4 N E H
Samuel Grant Oliphant,	Woodstown, N. J.,	Mrs. Waible's
Otto Alvin Ormond,	Elderton, Pa.,	4 N W
Franklyn Paddock,	New York City,	7 W W H
Henry Page, Jr.,	Princess Anne, Md.,	20 N E
George Jacobs Parker,	Mifflintown, Pa.,	E, U H
William Macready Parker,	Oil City, Pa.,	17 N E
George Stevenson Patton,	Princeton, N. J.,	Pres. Patton's
Harmar Denny Paxton,	Princeton, N. J.,	2 E W H
Frank Hervey Payne,	Titusville, Pa.,	11 N E
Nelson Lane Petty,	Trenton, N. J.,	1 W M W H
Edgar Allan Poe,	Baltimore, Md.,	5 W M W H
Daniel Warren Poor, Jr.,	Philadelphia,	9 N W
Benedict Lincoln Prieth,	Newark, N. J.,	9 S E
Frank Webster Propst,	Albany, Oregon,	13 N
Alfred Charles Post Quimby,	Jersey City, N. J.,	Mrs. Warren's
Charles Elbert Rhodes,	So. Schodack, N. Y.,	14 N M R H
William Richards Ridington,	Landsdale, Pa.,	35 S E
Michael Francis Riley,	Morristown, N. J.,	39 S E H
Robert Swan Robertson,	Cortland, N. Y.,	12 S M R H
Harry Porter Robinson,	New York City,	8 N R H
Joseph Haswell Robinson,	New York City,	Mrs. W. W. Smith's
Thomas Hastings Robinson, Jr.,	Allegheny, Pa.,	19 S E
Joseph Stockton Roddy,	New Bloomfield, Pa.,	8 S E
Samuel Semple,	Philadelphia,	79 U H
Charles Arthur Sidler,	Danville, Pa.,	35 N E H
George Howell Shields, Jr.,	St. Louis, Mo.,	2 S E
William Comman Spicer,	Harrisburg, Pa.,	1 S E H
Arthur Willing Spruance,	Wilmington, Del.,	9 W M W H
George Herbert Stephens,	Montrose, Pa.,	Mrs. Ferguson's
James Weaver Sterry,	New York City,	14 E W H
Charles Smith Stevens,	Cape May City, N. J.,	20 N E

Robert Stuart Stewart,	Detroit, Mich.,	45 U H
Robert Boorman Strong,	New Brunswick, N. J.,	2 W W H
Ambrose White Vernon,	Morristown, N. J.,	79 U H
Harwood Vernon,	Summit, N. J.,	79 U H
George Riddle Wallace,	Bellevue, Pa.,	88 N E H
Robert Benson Wallace,	Harrisburg, Pa.,	44 and 45 U H
James Hitchcock Wardwell,	South Orange, N. J.,	18 S W
Samuel Wasson,	Philadelphia,	1 N E H
George Wheeler,	Phoenixville, Pa.,	9 S M R H
Charles Dunning White,	Summit, N. J.,	10 N E
William Silas Whitehead,	Newark, N. J.,	19 S W
Alan Dickson Wilson,	Philadelphia,	15 S W
Lawrence Crane Woods,	Sewickley, Pa.,	1 U H
Alfred Beaver Yeomans,	Orange, N. J.,	19 N E H

JUNIORS 116

SOPHOMORE CLASS.

Lucien Abrams,	Dallas, Texas,	Mr. Wolfe's
James Purviance Atkinson,	Princeton, N. J.,	Mrs. Atkinson's
Frederick Randolph Bailey,	Elizabeth, N. J.,	Mrs. Atkinson's
Thomas Barclay,	Greensburg, Pa.,	8 N M R H
Thomas Bell,	Jersey City, N. J.,	2 S M R H
Imlay Benet,	Brooklyn, N. Y.,	15 U H
Robinson Potter Dunn Bennett,	Garden City, L. I.,	20 N W
Martin Voorhees Bergen, Jr.,	Camden, N. J.,	5 S R H
John William Rufus Besson,	Hoboken, N. J.,	3 E M W H
Leonidas Huston Besson,	Hoboken, N. J.,	3 E M W H
Frederick Gregory Betts,	Clearfield, Pa.,	3 E W H
George Whitefield Betts,	Englewood, N. J.,	6 N E
Cassius Edwin Bixler,	Eshcol, Pa.,	16 N
William Little Bradley,	Middletown, N. Y.,	Mr. Arnheiter's
John Menifee Brennan,	Paris, Ky.,	10 W M W H
James Chester Brewster,	Chester, N. J.,	24 S E H
William Sanderson Brown,	New York City,	17 U H
Frederick C. Bucher,	Columbia, Pa.	12 N E

George William Burleigh,	Great Falls, N. H.,	1 E M W H
Courtlandt Patterson Butler,	Blairstown, N. J.,	Rev. Mr. Hinsdale's
Howard Crosby Butler,	New York City,	33 N E H
Duncan Campbell,	Caledonia, N. Y.,	18 N
Herbert Swift Carter,	Orange Valley, N. J.,	8 W M W H
Marshall Andrews Christy,	Sewickley, Pa.,	6 E W H
Alonzo Church,	Washington, D. C.,	23 S E H
Elmer Baldwin Cole,	Windsor, N. J.,	Mrs. Camp's
Varnum Lansing Collins,	Washington, D. C.,	Mrs. Patterson's
Leon Martin Conwell,	Philadelphia,	80 U H
Pierre Frederick Cook,	Waterloo, N. J.,	10 S M R H
Richard Coulter, Jr.,	Greensburg, Pa.,	17 and 20 S E H
Frank Linley Critchlow,	Mt. Hermon, Mass.,	Mrs. Stonaker's
James Lucas DeLong,	Lexington, Ky.,	5 S E
Robert Denniston,	Philadelphia,	Mrs. Carpenter's
Edward Dickinson Duffield,	Princeton, N. J.,	Prof. Duffield's
Harry Slawson Dunning,	Middletown, N. Y.,	Mr. Arnheiter's
Smith Gardner Dunning,	Mechanicstown, N. Y.,	Mr. Arnheiter's
Albert Frost Earnshaw,	Lowville, N. Y.,	25 N
John William Easton,	Princeton, N. J.,	Mr. Easton's
Albert Zabriskie English,	Hightstown, N. J.,	27 N E H
Marcus Stults Farr,	Cranbury, N. J.,	25 N E H
Max Farrand,	Newark, N. J.,	19 W W H
Herbert Budd Gibby,	Princeton, N. J.,	Mrs. Gibby's
Andrew Caldwell Gray,	Wilmington, Del.,	5 S W
LeRoy Gresham,	Baltimore, Md.,	Mrs. Lavake's
Henry Ewing Hale, Jr.,	Princeton, N. J.,	Mrs. Hale's
Franklin Holmes Haliday,	Rahway, N. J.,	Mr. Priest's
Frank Hillman Hall,	Washington, D. C.,	7 N M R H
Howland Hanson,	Key East, N. J.,	Mr. Camp's
William Harris, Jr.,	Princeton, N. J.,	Mrs. Harris'
Charles Delucena Hart,	Philadelphia,	6 E M W H
Hayward Augustus Harvey, Jr.,	Orange, N. J.,	3 W W
Henry Clay Havens,	Toms River, N. J.,	16 N
Caspar Wistar Hodge, Jr.,	Princeton, N. J.,	Dr. Hodge's
James Frederic Hosford,	Kinderhook, N. Y.,	18 E W H
Robert Pollock Howie,	Westfield, Mass.,	37 N E H
Samuel Craig Huston,	Philadelphia,	2 N E

Frank Martin Hutchinson,	Sewickley, Pa.,	16 U H
William Beckford Irish,	New Castle, Pa.,	12 N W
Thomas Smith Irvin,	New York City,	14 S E
James Peter King,	Galt, Ontario,	1 N E
John Benem Kouwenhoven,	Flatbush, L. I.,	4 W W H
Finley Hall Lloyd,	Pittsburgh, Pa.,	11 and 12 U H
Lorenzo Grenville Lyon,	Elmira, N. Y.,	4 N E
Irvine McColl,	Caledonia, N. Y.,	18 N
John Robinson McCune,	Pittsburgh, Pa.,	11 and 12 U H
Harry Fleming McDowell,	Connellsville, Pa.,	1 S R H
Alan Cassilis McIlvaine,	Vincennes, Ind.,	2 S E
Austin McLanahan,	Chambersburg, Pa.,	13 S E H
Clarence Arthur McWilliams,	Brooklyn, N. Y.,	4 W W H
John Maclean Magie,	Paterson, N. J.,	18 N E
Albertus McLaren Marshall,	Dayton, O.,	20 N W
John Mills Mayhew,	Beatrice, Neb.,	1 S R H
Russell King Miller,	Philadelphia,	5 N R H
Frank Montgomery Milligan,	Newport, Pa.,	12 N M R H
Levi S. Mogel,	Bernville, Pa.,	Miss Leigh's
Theodore Wilson Morris,	Freehold, N. J.,	5 E M W H
Charles Ogden Mudge,	Princeton, N. J.,	Dr. Mudge's
William Leroy Mudge,	Princeton, N. J.,	Dr. Mudge's
William Belfrage Parsons,	New York City,	4 S E
George Wilson Peddie,	Philadelphia,	20 E W H
John Chester Backus Pendleton,	Berkeley Spr., W. Va.,	3 E M W H
Warington Walworth Periam,	Newark, N. J.,	64 and 65 U H
Bowdre Phinizy,	Augusta, Ga.,	14 S M R H
William Kelly Prentice,	New York City,	1 S W
John Luther Rankin,	Newark, N. J.,	30 S E
Charles Ellet Rieman,	Baltimore, Md.,	18 W W H
Alfred Randolph Riggs,	Baltimore, Md.,	7 W M W H
Jesse Bright Riggs,	Baltimore, Md.,	7 W M W H
John Sinclair Roberts, Jr.,	Bellefonte, Pa.,	42 N E H
Pierre Keller Satterfield,	Philadelphia,	3 S W
Joseph Mitchell Shellabarger,	Topeka, Kan.,	Mrs. Titus'
Charles Henry Shick,	Reading, Pa.,	12 S E
Ralph Duffield Small,	Boston, Mass.,	10 N R H
U. Franklin Smiley,	Philadelphia,	30 N E H

William Watson Smith,	Hollidaysburg, Pa.,	Mrs. Hubbard's
Charles Philip Spooner,	Hudson, Wis.,	9 S R H
Robert Alston Stevenson,	Lewiston, Pa.,	5 N R H
John William Stork,	Baltimore, Md.,	2 N W
William Stump,	Bel Air, Md.,	2 W M W
Joseph Gaston Symmes,	Cranbury, N. J.,	17 N E H
Francis Edgar Talcott,	New York City,	15 W W H
Charles Irvin Truby,	Steelton, Pa.,	38 S E H
John Van Ness,	Johnsonburg, N. J.,	2 N E H
Peter Vredenburgh,	Freehold, N. J.,	17 E W H
Williamson Updike Vreeland,	Rocky Hill, N. J.,	41 S E H
Frederick Clifford Ward,	Croton, N. Y.,	1 N E
Crowley Wentworth,	Randolph, N. Y.,	17 W W H
James Westervelt,	New Brighton, S. I.,	6 N M R H
Benjamin Vrome White,	Summit, N. J.,	10 N E
Calvin Wight,	New Hamburgh, N. Y.,	40 S E H
Edward Van Dyke Wight,	New Hamburgh, N. Y.,	40 S E H
Jesse Lynch Williams,	Princeton, Ill.,	7 S M R H
John Glover Wilson,	Baltimore, Md.,	10 N R H
John Edgar Witherspoon,	Chambersburg, Pa.,	10 N
Clinton Tyler Wood,	Fargo, N. Dak.,	4 S E
Richard Flavel Woods,	Philadelphia,	1 E M W H
Walter Livingston Wright, Jr.,	Imlaystown, N. J.,	26 S E H
Alexander Oliver Young,	Newton, N. J.,	39 U H
Lawrence Andrew Young,	Louisville, Ky.,	15 N E

SOPHOMORES, ... 119

FRESHMAN CLASS.

Charles Hart Angell,	Passaic, N. J.,	61 U H
William Osborn Baker,	Princeton, N. J.,	Trinity Rectory
Charles Alfred Barnett,	New Bloomfield, Pa.,	31 U H
Horatio Stockton Beach,	Palatine Bridge, N. Y.,	3 N E
James Beveridge,	Scotch Bush, N. Y.,	12 S E H
James Drake Black,	New York City,	63 U H
Hamilton Bogue,	Chicago, Ill.,	Dr. Macdonald's
Frederick Adolph Borcherling,	Newark, N. J.,	Mrs. Goldie's

Henry Wilson Bridges,	Ogdensburgh, N. Y.,	R, U H
James Henry Britton, Jr.,	Denver, Col.,	Mrs. Carroll's
Isaac Irving Brokaw,	New York City,	60 U H
Irving Swan Brown,	Passaic, N. J.,	62 U H
†Kenneth Brown,	Brooklyn, N. Y.,	Mrs. Carpenter's
Joseph Hervey Buchanan,	Pemberton, N. J.,	Rev. W. C. Ulyat's
Richard Vaux Buckley,	Philadelphia,	68 and 69 U H
Archibald Johnston Buist,	Charleston, S. C.,	Mrs. Margerum's
Isaac Wingerd Byers,	Five Forks, Pa.,	V, U H
James Donald Cameron,	Round Hill, N. S.,	Mr. Rowland's
Charles Underwood Carpenter,	Dayton, O.,	Mrs. Shann's
George Warren Case, Jr.,	Jersey City, N. J.,	Mrs. Fisher's
†Jefferson Paul Chandler,	St. Louis, Mo.,	Mrs. Wolfe's
Arthur Hutchins Cilley,	New York City,	Mrs. Paterson's
Woodford Clay,	Paris, Ky,	Mrs. Hamilton's
Walter Halsted Condict,	Newark, N. J.,	11 N E H
Edward Field Conover,	Princeton, N. J.,	Mr. F. S. Conover's
Harrison Roberts Daniels,	Dayton, O.,	38 U H
Henry Shackleford Davis,	Brooklyn, N. Y.,	2 U H
Parke Hill Davis.	Jamestown, N. Y.,	Mrs. Allen's
Joseph Albert Dear, Jr.,	Jersey City, N. J.,	Mr. A. L. Mershon's
Constant Lincoln DeWitt,	Deckertown, N. J.,	Mrs. Shann's
John Nevius Dodd,	Garfield, N. Y.,	5 S E H
William Henry Dodd,	Garfield, N. Y.,	5 S E H
Alfred Abel Doolittle,	Princeton, N. J.,	Mrs. L. J. Doolittle's
†Robert Driscoll, Jr.,	San Antonio, Tex.,	Mrs. Wolfe's
Ellsworth Dwight,	Plainfield, N. J.,	Mr. Updike's
George Erdman,	Asheville, N. C.,	Mrs. Warren's
Wilson Ferguson,	Reading, Pa.,	Mr. A. Dohm's
William Louis Freund,	Princeton, N. J.,	Mr. Freund's
John Shuman Furst,	Bellefonte, Pa.,	Mrs. F. A. Dohm's
George Larcombe Garmany,	Savannah, Ga.,	Mrs. Van Noy's
Charles Travers Grant,	Cuyahoga Falls, O.,	Mrs. Van Noy's
John Cleve Green,	Trenton, N. J.,	Mrs. Goldie's
Everette Lent Greene,	Cornwall on Hudson, N. Y.,	41 N E H
William Alexander Guild,	Gallatin, Tenn.,	Mrs. Lavake's
Charles Corle Hall,	Trenton, N. J.,	Mrs. Updike's

†On trial.

Samuel Warner Hard,	Englewood, N. J.,	Mrs. Hamilton's
Horace Lyman Brown Henderson,	Cassville, Pa.,	Mrs. Warren's
Cortlandt Van Rensselaer Hodge,	Burlington, N. J.,	I, U H
Fisher Howe,	Princeton, N. J.,	Arnheiter's Building
Charles Stone Hughes,	Bellefonte, Pa.,	3 N E
William Throckmorton Johnson,	Asbury Park, N. J.,	24 N E H
Henry Horatio Keedy,	Hagerstown, Md.,	B, U H
Augustus Clark Kellogg,	Elizabeth, N. J.,	Mrs. Atkinson's
William Day Kellogg,	Elizabeth, N. J.,	Mrs. Atkinson's
Philip King,	Washington, D. C.,	33 S E H
Felix Hill Lester,	Los Angeles, Cal.,	Mrs. Tolson's
Dwight Mallory Ludington,	Baltimore, Md.,	Mr. Chas. Zapf's
Loren Mill Luke,	Nanticoke, Pa.,	Mrs. Updike's
Benjamin Brandreth McAlpin,	Sing Sing, N. Y.,	71 U H
Alexander McGaffin,	Belfast, Ireland,	Mrs. McCarty's
†Francis Fontaine Maury,	Philadelphia,	Mrs. McCarty's
Gardiner Hope Miller,	Roselle, N. J.,	Mrs. Atkinson's
James Alexander Miller,	Roselle, N. J.,	Mrs. Atkinson's
Frederick Hubbell Mills,	Leon, N. Y.,	Mrs. Allen's
Luther Reily Moffitt,	Harrisburg, Pa.,	66 U H
Charles Hall Montgomery,	Warsaw, N. Y.,	Mrs. Bayles'
DuBois Schanck Morris,	Frechold, N. J.,	5 E M W H
George Richards Murray,	Princeton, N. J.,	Dean Murray's
David Torence Neely,	Honey Grove, Pa.,	39 N E H
Charles Bertram Newton,	Abington, Pa.,	Mrs. Easton's
Walter Thomas Noble,	Topeka, Kan.,	Mrs. Titus'
Charles Williams Ottley,	Columbus, Miss.,	Mrs. Warren's
Edward Rush Palmer,	Louisville, Ky.,	Mrs. Lavake's
John Brent Palmer,	Louisville, Ky.,	Mrs. Lavake's
Francis Landey Patton, Jr.,	Princeton, N. J.,	Pres. Patton's
William Elmer Pollison,	Waverley Park, N. J.,	17 N W
Harry Otis Pool,	New York City,	Mrs. Paterson's
Bertram Van Dyck Post,	Beirut, Syria,	Mrs. Easton's
Alexander Couper Proudfit,	Baltimore, Md.,	Mr. A. G. Dohm's
William James Reid, Jr.,	Pittsburg, Pa.,	Mr. Rowland's
Charles Trowbridge Riggs,	Marsovan, Turkey,	15 S E H
John Rodgers,	Philadelphia,	Mr. Freund's
Herbert Milton Rogers,	Omaha, Neb.,	Mrs. Warren's

James Slocum Rogers,	Philadelphia,	77 U H
José Romero,	City of Mexico,	Mr. J. McCloskey's
John Summerfield Salter,	Philadelphia.	Miss Hamilton's
Elmer Krauss Schultz,	Colebrookdale, Pa.,	V, U H
Edgar Calvin Seibert,	Glen Ridge, N. J.,	Mrs. Mershon's
Clayton Fenn Sherman,	Davenport, N. Y.,	Mrs. Tomlinson's
Robert Thomson Sloss,	Greensburgh, Ind.,	Mrs. Easton's
William Spiegel,	Newport, Ky.,	Mrs. Burroughs'
†Willett Main Spooner,	Hudson, Wis.,	9 S R H
Frederick William Stelle,	Trenton, N. J.,	Mr. Stout's
Marshall Thompson,	St. Paul, Minn.,	14 S E H
Edward Yeomans Thorp,	East Orange, N. J.,	21 S E H
John Lee Tildsley,	Titusville, Pa.,	Mrs. McCarty's
William Hogarth Tower,	Brooklyn, N. Y.,	Mrs. Carpenter's
Theodore Baker Turner,	Corning, Iowa,	Mr. Rowland's
William Ferguson Tyson,	Columbia, Pa.,	12 N E
William Maginnis Washburn,	Saugerties, N. Y.,	Dr. Bergen's
Elmer George Wherry,	Peking, China,	Mrs. Lavake's
John Frederick Wherry,	Peking, China,	Mrs. Lavake's
George Emmons White,	Navy Yard, Portsmouth, N. H.,	"Edgehill"
Israel Albert White,	Summit, N. J.,	10 N E
John Featherer Wilkinson,	Harrisonville, N. J.,	Mrs. Waibel's
Herbert Ludlum Winans,	Jamaica, N. Y.,	Prof. Winans'
Robert Kennedy Wurts,	Philadelphia,	O, U H
Andrew Cutler Wylie,	Brooklyn, N. Y.,	25 S E H
†Harry Null Yont,	Greensburgh, Pa.,	Mrs. Updike's
Henry Young, Jr.,	Newark, N. J.,	44 U H

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UNDERGRADUATES IN THE JOHN C. GREEN SCHOOL OF SCIENCE.

SENIOR CLASS.

I. Candidates for B. S. II. Candidates for C. E. III. Candidates for E. E.

I.	William Vance Dinsmore,	Bloomington, Ill.,	16 N E
II.	Wilbur Chapman Fisk,	New York City,	12 E W H
II.	George Goldie, Jr.,	Princeton, N. J.,	Mr. Goldie's
I.	Frederick Wm. Hagney,	Newark, N. J.,	29 S E H
I.	Bernard Shea Horne,	Pittsburgh, Pa.,	12 N W
I.	Albert Gould Jennings,	Brooklyn, N. Y.,	16 W W H
I.	Paul Foster Leach,	Philadelphia,	31 N E H
II.	Chas. Richard McMillan,	Princeton, N. J.,	Prof. McMillan's
II.	William Passmore Meeker,	Newark, N. J.,	11 S M R H
I.	Frank Seymour Miller,	Elmira, N. Y.,	16 N E
I.	Charles Howard Miner,	Wilkes-Barre, Pa.,	7 S R H
I.	Frank John Newbury,	Lima, N. Y.,	19 N E
II.	Harry Otis Nutting,	Lebanon, Pa.,	14 N W
II.	William Pitt Nutting,	Lebanon, Pa.	5 N E
II.	Howard Crathorne Phillips,	New York City,	3 N E H
II.	Frederick Vernon Pitney,	Morristown, N. J.,	1 W W H
II.	*George Van Dusen Rickert,	Pottsville, Pa.,	18 N W
I.	*Charles K. Rodgers,	Springfield, O.,	7 S W
II.	Robert Lincoln Scudder,	Princeton, N. J.,	Mr. Scudder's
II.	Edgar Maverick Smith,	New York City,	16 S W
I.	Samuel Wood Thurber,	Syracuse, N. Y.,	35 S E H
I.	William Campbell Truesdell,	Newark, N. J.,	8 W W H
I.	Frank Scott Willock,	Pittsburgh, Pa.,	A, U H

SENIORS 23

* Not candidates for a degree with this class.

JUNIOR CLASS.

I.	Radclyffe Furness,	Philadelphia,	9 S W
II.	*Arthur Buckingham Gladwin,	Leonia, N. J.,	6 W W H
I.	Edwin Bates Harts,	Springfield, Ill.,	Mrs. Burroughs'
II.	William Lapidge Hedenberg,	Newark, N. J.,	P, U H
I.	*Russell Lee Jones,	Farmington, Conn.,	9 S W
II.	Curtis Edward Knickerbocker,	Morrisville, N. Y.,	N, U H
I.	Charles Thomas Mixer,	Chicago, Ill.,	Prof. Young's
II.	Theodore Pesinger Payne,	Sayville, N. Y.,	11 N
I.	John Hutchings Sealy,	Galveston, Tex.,	41 and 42 U H
II.	*Robert Anderson Watts,	Louisville, Ky.,	N, U H
II.	Charles Edgar Zortman,	Lancaster, Pa.,	11 N M R H

JUNIORS 11

SOPHOMORE CLASS.

II.	John Howard Adams,	Brooklyn, N. Y.,	8 W M W H
I.	*Walter Monteith Aikman, Jr.,	Brooklyn, N. Y.,	Mrs. Priest's
I.	Benjamin Ames,	Washington, D. C.,	19 U H
II.	Chester Bayles,	New York City,	10 W M W H
II.	Arthur Wellman Butler,	Yonkers, N. Y.,	10 S E
II.	Orville Platt Curran, Jr.,	Chicago, Ill.,	7 E W H
II.	Arthur LeGrand Doty,	Orange, N. J.,	1 N W
I.	George Thomas Dunlop, Jr.,	Washington, D. C.,	10 S R H
I.	Edward D. Ellison,	Kansas City, Mo.,	10 S R H
II.	William Elmer, Jr.,	Trenton, N. J.,	5 S M R H
I.	Evan Morton Evans,	Englewood, N. J.,	5 S W
II.	Robert Field,	Fort Adams, R. I.,	Mr. F. Conover's
I.	John Young Graham,	Roberts, Wis.,	4 N M R H
II.	*Charles Van Dyke Gulick,	Princeton, N. J.,	Mr. V. B. Gulick's
I.	John Hunter Hanna,	Henderson, Ky.,	20 S W
I.	Sheppard Homans, Jr.,	Englewood, N. J.,	40 U H
II.	Curtis Grubb Hussey,	Allegheny, Pa.,	7 N W
II.	William Vail Johnson,	Orange, N. J.,	1 N W
II.	*Charles Albert McKenney,	Washington, D. C.,	43 U H
I.	Frederick John Moses,	Trenton, N. J.,	8 S R H
II.	James Porter Parker,	New Orleans, La.,	74 U H
I.	William Hopkins Witt,	Henderson, Ky.,	20 S W

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ERRATUM.

Page 164, third line from bottom, insert,

I.	John Zimmerman,	New Glarus, Wis.,	17 S M R H

FRESHMAN CLASS.

I. Edgar Wright Baird, Merion, Pa., Mrs. Geo. Goldie's
I. Robert Dickson Ballantine, Newark, N. J., 14 Nassau Hotel
II. William John Barkley, New Orleans, La., 1 U H
I. Hobart Dominick Betts, Englewood, N. J., 6 N E
I. Wright Bigler, Clearfield, Pa., Mr. H. Bayles'
II. †William Harman Brown, Jr., New York City, Mrs. King's
III. †Thomas Christy Chapin, New York City, Hankins' Building
I. Horace Thurber Conant, Monroe, Mich., 14 U H
II. †Will Ross Davidson, Steubenville, O., Mrs. Appleget's
III. †Daniel Clarence Durland, New York City, Mrs. King's
I. Ogden Matthias Edwards, Jr., Pittsburgh, Pa., Mr. J. G. Durner's
II. Albert Egbert, Franklin, Pa., 9 N E
II. †Philemon Aumack Falkinburgh, Toms River, N. J., 10 U H
I. Howard Sinnickson Forman, Jersey City, N. J., Mr. Fisher's
I. George Corning Fraser, Washington, D. C., 7 E M W H
II. †Commodore Vanderbilt Granger, Lancaster, Ky., Mrs. Van Dyke's
II. Henry Gregory Granger, Philadelphia, Mrs. Carroll's
II. Keppele Hall, Trenton, N. J., Mrs. Stout's
II. Allen Harris, Princeton, N. J., Mrs. Harris'
III. ‡Albert Charles Hencken, New York City, Hankins' Building
III. Gavin Nelson Houston, Maplewood, N. J., Mrs. Shann's
I. Harry Aden Howland, Titusville, Pa., Mrs. Hubbard's
I. †Pearsall Humphrey, New York City, Carpenter's Building
II. Charles Edwin Humphreys, Bryn Mawr, Pa., Mrs. Wolfe's
II. Clarence Hurd, San Antonio, Tex., Mrs. W. W. Smith's
II. Heber Clyde Inslee, Newark, N. J., Mrs. H. Campbell's
I. Eliot Gregory Jackson, Washington, D. C., Mrs. Belden's
I. Kenneth Campbell Kirtland, East Orange, N. J., 44 U H
II. George Klots, New York City, Mrs. Carroll's
II. Harris Lindsley, Nashville, Tenn., Mrs. Carroll's
III. †Lucius Freeman Little, Owensboro, Ky., Mr. Freund's
III. George Macloskie, Jr., Princeton. N. J., Prof. Macloskie's

†Deficient on entrance examination.
‡On trial.

I. Carleton Sayre Mather, New York City, Mr. Thos. Brown's
II. John Randolph McAlpin, New York City, 70 U H
II. †Louis Harry McClumpha, Amsterdam, N. Y., Mrs. Belden's
II. Howard Moore, Clayton, N. J., Carpenter's Building
II. Robert McGee Mullen, Indiana, Pa., 33 U H
II. Harold Griffith Murray, Flushing, N. Y., Mrs. Van Noy's
II. Edward Russell Norton, Jr., San Antonio, Tex., Mrs. W. W. Smith's
I. Arthur D'Evereux Parker, New Orleans, La., 1 U H
III. †John Sheldon Paul, New York City, Mrs. Van Noy's
I. †Alexander McAlpin Phillips, Trenton, N. J., Mrs. Stout's
III. James Ditmars Remsen, Flatbush, L. I., 10 W W H
III. Simon Harrison Rollinson, Orange, N. J., Mrs. C. Zapf's
I. Pennington Satterthwaite, Princeton, N. J., Mrs. Satterthwaite's
I. Frank William Smith, Philadelphia, 48 U H
III. †Walter Clare Stearns, New York City, Dr. Macdonald's
II. †Charles Hodge Stockton, Princeton, N. J., Mr. S. W. Stockton's
II. John Stockton, Princeton, N. J., Mrs. Richard Stockton's
II. Charles Edward Hopkins Sudler, Philadelphia, Mr. Freund's
I. Frederick Sheppard Titsworth, Newark, N. J., Mr. H. Campbell's
II. Ralph Herbert Warren, New York City, 10 E M W H
II. William Butler Woodbridge, Chicago, Ill., Mrs. Harris'
II. Enrique Ybanez, City of Mexico, Mrs. Mershon's

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SPECIAL STUDENTS.

NOT CANDIDATES FOR A DEGREE.

Paul Clark Aylesworth,	Council Bluffs, Ia.,	U, U H
Arthur Sterling Auchincloss,	Orange, N. J.,	4 W M W H
Campbell Elias Babcock,	Chicago, Ill.,	31 S E H
Henry Bainbridge Baker,	Elizabeth, N. J.,	Mrs. Atkinson's
Arthur Denton Ball,	Newark, N. J.,	6 E M W H
James Barnes,	New York City,	4 W M W H
Harry Elmer Bierly,	Rebusburg, Pa.,	3 S E
James Sutton Blair,	Indiana, Pa.	33 U H
Alexander Nixon Bodine,	Philadelphia,	13 E W H
Charles Edward Boynton, Jr.,	Atlanta, Ga.,	T, U H
Eugene Valentine Brewster,	Bayshore, L. I.,	27 N E H
Frederic Brokaw,	New York City,	33 U H
Arthur Grant Brown,	Woodbridge, N. J.	7 S E H
Eric Gregg Brotherlin,	Hollidaysburg, Pa.,	Mrs. Bayliss'
Richard Shepard Bryan,	St. Louis, Mo.,	Mr. Dohm's
Luther Hanson Cary,	Chicago, Ill.,	72 U H
Walter Sellers Cash,	Philadelphia,	Ivy Club
Charles Jenney Chambers,	Philadelphia,	L, U H
Greene Clay, Jr.,	Mexico, Mo.,	Mrs. Hamilton's
Milton Boyd Craighead,	Richmond, Ind.,	Mr. Hankins'
Roscoe Henry Channing, Jr.,	Bessemer, Mich.,	11 W W H
Frederic Hutchinson Cubberley,	Trenton, N. J.,	11 N H
John Chalmers DaCosta, Jr.,	Philadelphia,	Mr. Hankins'
George Kidder Davis,	Wilkes-Barre, Pa.,	15 E W H
Benjamin Donnelley,	Chicago, Ill.,	9 U H
Halsey Durand,	Newark, N. J.,	9 E W H
Rebus Joseph Eastman,	Indianapolis, Ind.,	Mrs. Anderson's
William John Brown Edgar,	Jersey City, N. J.,	1 S E
Rufus Colwell Eldridge,	Cuba, N. Y.,	Mrs. Wortley's
John Gardner Gould,	Newark, N. J.,	S R, U H
William Mudge Graham,	Montgomery, Ala.,	8 N E
Frederick Henry Gunning,	New York City,	19 E W H
Henry Galloway Comingo Hallock,	Steubenville, O.,	11 Bergen Row
William Allen Hallock,	Steubenville, O.,	11 Bergen Row
Eder Vreeland Haughwout,	Denver, Col.,	Mrs. Appleget's

William Langdon Hayden,	Columbus, O.,	67 U H
Joseph Albright Henry,	Oxford, N. J.,	Mr. Fisher's
Arthur Baird Huey,	Philadelphia,	Mrs. Atkinson's
Joseph Miller Huston,	Philadelphia,	2 N E
Russell Patterson Jacobus,	Plainfield, N. J.,	Mr. Arnheiter's
Cyrus Church Jefferson,	St. Paul, Minn.,	73 U H
Harry Lang Jenkinson,	Newark, N. J.,	Mr. Priest's
Thomas Benjamin Kennedy,	Chambersburg, Pa.,	75 and 76 U H
Wilton John Lambert,	Washington, D. C.,	Mrs. Margerum's
David Smith Lansden,	Cairo, Ill.,	Mr. Hubbard's
Alexander Spinning Lilley,	Columbus, O.,	8 E W H
Caleb Wheeler Lord,	Lebanon, Pa.,	Mrs. Burke's
Charles Sturgeon McMahon,	Cambridge, O.,	Mr. Hankins'
Gilbert N. McMillan,	Detroit, Mich.,	6 and 7 U H
John Fleming Main,	Seaton, Ill.,	Mr. J. Macloskie's
Leon H. Marashlian,	Cæsarea, Asia Minor,	Mr. Mershon's
Henry Lee Mason, Jr.,	Pittsburgh, Pa.,	Mr. Jos. Priest's
Samuel J. Minot,	East Orange, N. J.,	6 S W
John Kearsley Mitchell,	Philadelphia,	60 U H
Ben Luker Morgan,	Freedom, Pa.,	3 S E H
Arthur Gardner Moses,	Trenton, N. J.,	3 S R H
Max Munger,	Plainfield, N. J.,	2 N W
Haughton Murray,	Princeton, N. J.,	Dean Murray's
Robert Dudley Osburn,	Sewickley, Pa.,	75 and 76 U H
Calvin Pardee,	Philadelphia,	Mr. Priest's
William Edward Pearson,	Orange Heights, N. J.,	8 S W
Francis Theodore Pierson,	East Orange, N. J.,	14 N E H
James Wilson Porter,	Sewickley, Pa.,	F, U H
Albert Graves Reed,	Paducah, Ky.,	Mrs. Tomlinson's
Edward Roderick,	Hazleton, Pa.,	Mrs. Shann's
Inman Sanders,	Atlanta, Ga.,	K, U H
Richard Theodore Shelton,	St. Louis, Mo.,	Mrs. Dohm's
William Mansfield Skiles,	Minneapolis, Minn.,	49 and 50 U H
Frank Berkeley Smith,	New York City,	Mr. Priest's
Isaac Butler Smith,	Cedar Rapids, Ia.,	9 N E H
Robert Brinkley Snowden,	Memphis, Tenn.,	G, U H
Charles Wood Somerby,	Philadelphia,	O, U H
David Franklin Stakes,	Germantown, Pa.,	1 S M R H

Lewis Townsend Stevens,	Cape May, N. J.,	1 S E
Orville Comstock Taintor,	New York City,	7 S M R H
Ralph N. Taintor,	New York City,	Mrs. Goldie's
Charles Wood Tindle,	Pittsburgh, Pa.,	13 U H
James Ross Todd,	Louisville, Ky.,	C, U H
John Worthington Valliant,	St. Louis, Mo.,	9 E M W
Frank Herbert Wadsworth,	Warsaw, N. Y.,	Mr. Bayles'
Alfred Janvier Wagner,	Minneapolis, Minn.,	49 & 50 U H
Harry Page Warden,	Sewickley, Pa.,	M, U H
Charles Nelson Wheeler,	Peoria, Ill.,	13 S M R H
Samuel Harris Wigton,	Altoona, Pa.,	Mrs. Hubbard's
George Shreve Wilkins,	Mt. Holly, N. J.,	3 N M R H
Lee Barnes Woodcock,	Bellefonte, Pa.,	Mrs. F. A. Dohm's
John Alexander Yorke,	Brooklyn, N. Y.,	4 S E

SPECIALS, ... 87

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CLASSIFICATION OF UNDERGRADUATES BY RESIDENCE.

New Jersey	179	Colorado	2
Pennsylvania	168	Kansas	2
New York	122	New Hampshire	2
Ohio	20	Alabama	1
Illinois	17	Connecticut	1
Maryland	17	Florida	1
Kentucky	14	Maine	1
District of Columbia	13	Mississippi	1
Missouri	11	North Carolina	1
Indiana	7	North Dakota	1
California	5	South Carolina	1
Georgia	5	Rhode Island	1
Massachusetts	5	West Virginia	1
Minnesota	5		
Texas	5	China	2
Delaware	4	Egypt	2
Iowa	4	Mexico	2
Michigan	4	Syria	2
Tennessee	4	Turkey	2
Wisconsin	4	Asia Minor	1
Louisiana	3	Ireland	1
Nebraska	3	Nova Scotia	1
Oregon	3	Ontario	1

ABBREVIATIONS.

N, Nassau Hall.
N E, North Entry of East College.
S E, South Entry of East College.
N W, North Entry of West College.
S W, South Entry of West College.
N R H, North Entry of Reunion Hall.
S R H, South Entry of Reunion Hall.
N M R H, North Middle Entry of Reunion Hall.
S M R H, South Middle Entry of Reunion Hall.
E W H, East Entry of Witherspoon Hall.
W W H, West Entry of Witherspoon Hall.
E M W H, East Middle Entry of Witherspoon Hall.
W M W H, West Middle Entry of Witherspoon Hall.
N E H, North Entry of Edwards Hall.
S E H, South Entry of Edwards Hall.
U H, University Hall.
S R, U H, Smoking Room, University Hall.

HONORS AND DEGREES CONFERRED.

DEGREES.

Honorary Degrees Conferred November, 1888.

D.D. —Rev. William Alfred McAtee, '59, Wisconsin.
Rev. James Hall McIlvaine, '66, New York.
Rev. George Howard Duffield, '78, Michigan.
Rev. George William Knox, Professor in the Imperial College, Japan.

Litt.D.—Rev. James Meeker Ludlow, D.D., '61, New Jersey.

Ph.D. —Malcolm McNeill, '77, Professor in Lake Forest University, Ill.
Fletcher Durell, '79, Professor in Dickinson College, Pa.
George W. McMillan, President of Richman College, Ohio.

D.Sc. —James L. Patterson, Master in Lawrenceville School, New Jersey.

Honorary Degrees, Conferred June, 1889.

LL.D. —His Excellency Benjamin Harrison, President of the United States.
Hon. George Gray, '59, United States Senator from Delaware.

D.D. —Rev. Ninian Beale Remick, '66, New York.
Rev. William Christy Still, '66, New York.
Rev. William Hamilton Miller, '70, Pennsylvania.
Rev. Wilton Merle Smith, '77, New York.
Rev. Charles Wood, Pennsylvania.

Ph.D. —W. R. Crabbe, Pennsylvania.

D.Sc. —John Warne Phillips, M.S., '84.

Degree in Course Conferred February, 1889.

D.Sc.—Henry Dallas Thompson, A. M., of the Class of 1885.
Thesis: Coordination of the Hyperelliptic θ— and σ— functions.

Degrees in Course Conferred June, 1889.

Litt.D.—Marion Mills Miller, A.M., of the Class of 1886.
Thesis: Peele, Decker and Massinger.

Ph.D. and A.M.—John Wahl Queen, A.B., of the Class of 1887.
Thesis—State Aid to Charities.

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HONORS—1888-89.

COMMENCEMENT HONORS.

SENIOR HONORMEN.—*Magna cum laude.*

Lewis Seymour Mudge,	*Latin Salutatory.*
Fred Neher,	*English Salutatory.*
Robert Eliot Speer,	*Valedictory.*

SECOND GROUP.—*Cum laude.*

With special excellence in particular departments indicated.

Richmond Ogston Aulick,	*Political Science.*
Alfred Hamilton Barr,	
David Bovaird, Jr.,	*Chemistry.*
John Milton Brooks,	*Mathematics.*
George Herbert Carter,	
Harry Gurnee Drummond,	*Physics.*
Edward Ringwood Hewitt,	
Robert Henry Life,	*Philosophy.*
Edmund Yard Robbins,	*Classics.*
Thomas Henry Powers Sailer,	
James Frederick Stebbins,	*Belles Lettres.*
Howard Crosby Warren,	*Mental Science.*

FELLOWS.

(For names of Fellows see page 16.)

SENIOR PRIZEMEN.

ALEXANDER GUTHRIE MC COSH PRIZE.

Not awarded.

CLASS OF 1859 PRIZE IN ENGLISH LITERATURE.

Sidney Dale Furst, Pennsylvania.

THE GEORGE POTTS BIBLE PRIZES.

Andrew Banks, Pennsylvania.
Malbone W Graham, Iowa.

THE LYMAN H. ATWATER PRIZE IN POLITICAL SCIENCE.

James Frederick Stebbins, New York.

LYNDE PRIZE DEBATE.

Robert Eliot Speer, Pennsylvania, *First Prize.*
Clarence Blair Mitchell, New Jersey, *Second Prize.*
David Ripley Todd, Kansas, *Third Prize.*

DEBATERS.

American Whig Society.	*Cliosophic Society.*
Maitland Alexander, N. Y.	Frank S. Katzenbach, Jr., N. J.
Robert Henry Life, N. Y.	Robert Eliot Speer, Pa.
Clarence Blair Mitchell, N. J.	David Ripley Todd, Kansas.

BAIRD PRIZEMEN.

The Baird Prize.	Robert Eliot Speer, Pennsylvania.
In Oratory.	Robert Henry Life, New York, and Thomas Henry Powers Sailer, Pennsylvania.
In Delivery	Maitland Alexander, New York.
In Poetry.	William Laing Merrill, New York.
In Disputation	Frank Snowden Katzenbach, Jr., New Jersey, *First Prize.*
	Edmund Yard Robbins, N. J., *Second Prize.*

Competitors Appointed for Excellence in English Composition: For Baird Prize and Prize for Oratory—H. G. Drummond, James

Hunter, R. H. Life, C. B. Mitchell, L. S. Mudge, E. Y. Robbins, R. E. Speer, H. C. Warren. *For Prize for Oratory*—W. P. Atkinson, R. O. Aulick, A. H. Barr, D. Bovaird, Jr., J. M. Brooks, G. H. Carter, J. S. Emans, S. D. Furst, J. O. Gayley, M. W. Graham, J. C. Gray, G. G. Merrill, W. L. Merrill, A. C. McCord, D. W. McCord, F. Neher, T. H. P. Sailer, J. F. Stebbins.

FREDERICK BARNARD WHITE PRIZE IN ARCHITECTURE.

Edward Ringwood Hewitt, New York.

THEODORE CUYLER PRIZE IN ECONOMICS.

Gormly J. Sproull, New York.

JUNIOR PRIZEMEN.

Junior First Honor Scholar.

Edward Phillips Burgess, Jr., Massachusetts.

Maclean Prizeman.

Edgeworth Bird Baxter, Georgia.

Junior Orator Medallists.

Francis Palmer, Maine, *First Medal.*
Edgeworth Bird Baxter, Georgia, *Second Medal.*
Clarke Benedict Williams, New York, *Third Medal.*
Knowlton Lyman Ames, Illinois, *Fourth Medal.*

Competing Junior Orators.

American Whig Society.	*Cliosophic Society.*
Knowlton Lyman Ames, Ill.	Tileston Fracker Chambers, D. C.
Edgeworth Bird Baxter, Ga.	Huntington W. Merchant, N. Y.
James Jeffries Charlton, Ore.	Clarke Benedict Williams, N. Y.
Francis Palmer, Me.	John Morris Yeakle, Pa.

JUNIOR HONORMEN.

First Group.

E. B. Baxter, Ga.
E. P. Burgess, Jr., Mass.
G. L. Shearer, Cal.
R. P. Shick, Pa.
J. M. Yeakle, Pa.

Second Group.

E. L. Bogart, N. Y.
J. C. Bucher, Pa.
D. D. Casement, O.
T. F. Chambers, D. C.
H. K. Denlinger, Pa.
W. S. Furst, Pa.
W. D. Gibby, N. J.
A. S. Guffey, Pa.
H. W. Hathaway, N. J.
J. B. Hillegass, Pa.
Charles Hodge, Pa.
A. E. Linder, Pa.
Frank Lukens, N. J.
R. T. McCready, Pa.
A. H. McKee, Pa.
H. W. Merchant, N. Y.
Dunlop Moore, Jr., Pa.
Francis Palmer, Me.
E. G. Rawson, Jr., N. Y.
J. D. Voorhees, N. J.
F. M. Wall, N. Y.
C. B. Williams, N. Y.
C. A. Woods, Pa.

JUNIOR HONORMEN, SCHOOL OF SCIENCE.

B. S. Course.

F. J. Newbury, N. Y.

C. E. Course.

F. V. Pitney, N. J.

SOPHOMORE PRIZEMEN.

Class of 1861 *Prize.*

Daniel Warren Poor, Jr., Pa., with honorable mention of Cornelius Rea Agnew, N. Y., and James Henry Dunham, N. J.

FRANCIS BIDDLE PRIZE.

Samuel Grant Oliphant, N. J.

SOPHOMORE HONORMEN.

First Group.

J. H. Dunham, N. J., State Model School, Trenton, N. J.
Donald McColl, N. Y., Westminster College, New Wilmington, Pa.
G. F. McKinney, Pa., Hill School, Pottstown, Pa.

J. C. Meyers, Pa.,	York Collegiate Institute, Pa.
S. G. Oliphant, N. J.,	Phillips Academy, Exeter, N. H.
G. R. Wallace, Pa.,	Univ. of Western Pa., Pittsburgh, Pa.
C. D. White, N. J.	Summit Academy, N. J.

Second Group.

Wilson Aull, Mo.,	Smith Academy, St. Louis, Mo.
C. O. Bossermann, Pa.,	Bloomfield Acad., New Bloomfield, Pa.
C. C. Dana, N. Y.,	Phillips Academy, Exeter, N. H.
H. S. Davis, Del.,	Phillips Academy, Andover, Mass.
C. H. Denman, N. Y.,	Geneseo State Normal School, N. Y.
A. P. Dennis, Md.,	Blair Presbyterial Acad., Blairstown, N. J.
E. W. Evans, Jr., N. J.,	State Model School, Trenton, N. J.
C. M. Gordon, Pa.,	Rev. J. Smith Gordon, Fannettsburg, Pa.
Erskine Hewitt, N. Y.,	F. S. Drisler's School, 15 E. 49th St., N. Y.
J. P. Hoskins, Pa.,	Shortlidge's Academy, Media, Pa.
F. T. Moore, N. J.,	West Jersey Academy, Bridgeton, N. J.
G. S. Patton, N. J.,	Rev. George Pierson.
E. A. Poe, Md.,	Mr. George G. Carey's School, Baltimore, Md.
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CATALOGUE

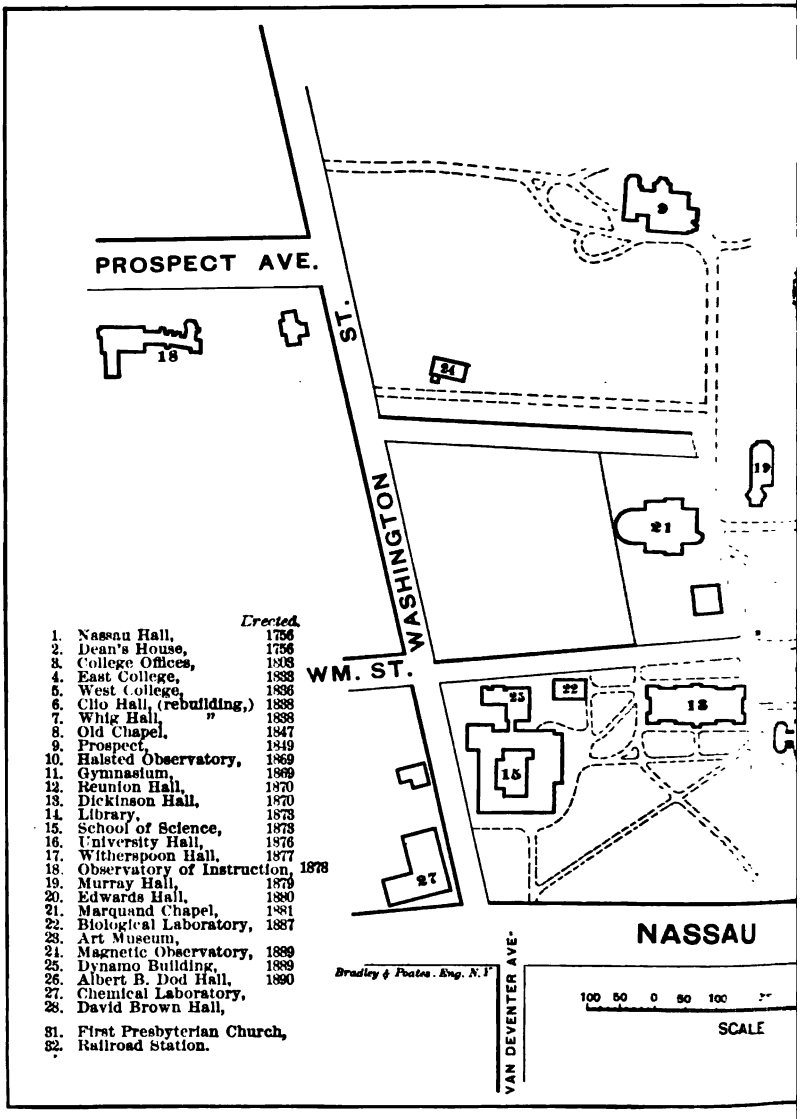
OF THE

COLLEGE OF NEW JERSEY

AT

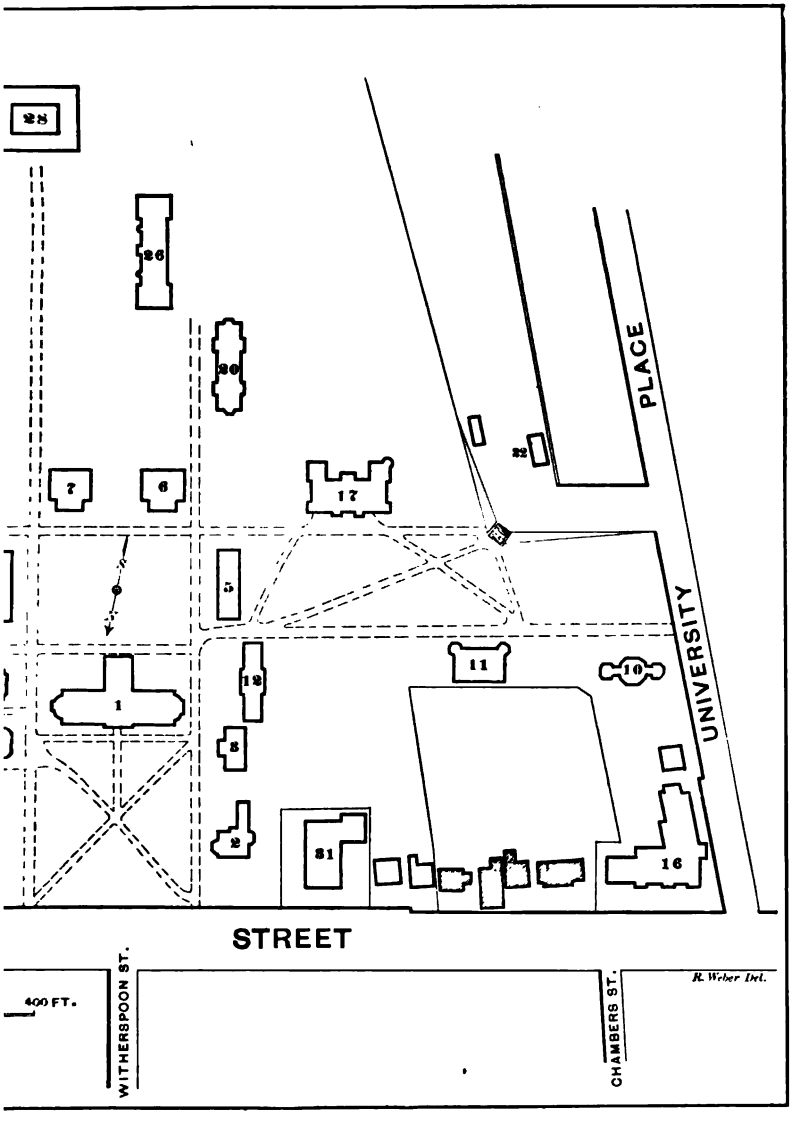
PRINCETON

1890-91



		Erected.
1.	Nassau Hall,	1756
2.	Dean's House,	1756
3.	College Offices,	1803
4.	East College,	1833
5.	West College,	1836
6.	Clio Hall, (rebuilding,)	1838
7.	Whig Hall, "	1838
8.	Old Chapel,	1847
9.	Prospect,	1849
10.	Halsted Observatory,	1869
11.	Gymnasium,	1869
12.	Reunion Hall,	1870
13.	Dickinson Hall,	1870
14.	Library,	1873
15.	School of Science,	1873
16.	University Hall,	1876
17.	Witherspoon Hall,	1877
18.	Observatory of Instruction,	1878
19.	Murray Hall,	1879
20.	Edwards Hall,	1880
21.	Marquand Chapel,	1881
22.	Biological Laboratory,	1887
23.	Art Museum,	
24.	Magnetic Observatory,	1889
25.	Dynamo Building,	1889
26.	Albert B. Dod Hall,	1890
27.	Chemical Laboratory,	
28.	David Brown Hall,	
31.	First Presbyterian Church,	
32.	Railroad Station.	

COLLEGE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STREET
400 FT.
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CHAMBERS ST.
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AMPUS.

CATALOGUE

OF THE

COLLEGE OF NEW JERSEY

AT

PRINCETON

ONE HUNDRED AND FORTY-FOURTH YEAR

1890-91

Princeton Press

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CALENDAR.

1890.

Sept. 16–17.	Examinations for admission, in Princeton only.
Sept. 17.	First term begins—College assembles at 8 P. M. in Marquand Chapel.
Sept. 18.	Conditioned and unexamined students (not candidates for entrance) report to their instructors.
Sept. 24.	Preliminary examinations for University degrees.
Nov. 13.	Stated Meeting of the Board of Trustees.
Nov. 27.	Thanksgiving Day.
Dec. 24–Jan. 7.	Christmas vacation.

1891.

Jan. 23–Feb. 4.	Examinations.
Jan. 29.	Day of Prayer for Colleges.
Feb. 4.	End of first term.
Feb. 5.	Second term begins.
Feb. 12.	Stated Meeting of the Board of Trustees.
Feb. 22.	Washington's Birthday.
March 26–31.	Spring Recess.
May 7.	Last day for renewing room agreements for '91–92.
May 13–23.	Senior final examinations.
May 26.	Annual allotment of rooms.
May 27–June 6.	Examinations of the three lower classes.
June 7.	Baccalaureate Sunday.
June 8–10.	Commencement Meeting of the Board of Trustees.
June 8.	Class Day—Junior Orations, 7:30 P. M.
June 9.	Reading of Theses by Scientific students—Annual Meetings of Literary Societies and Alumni Association—Lynde Prize Debate, 7:30 P. M.
June 10.	144th Annual Commencement.
June 11–12.	Examinations for admission, held simultaneously in Princeton and elsewhere.
June 12–Sept. 22.	Long vacation.
Sept. 22–23.	Examinations for admission, and on entrance conditions, in Princeton only.
Sept. 23.	First term begins—College assembles at 8 P. M. in Marquand Chapel.

Sept. 24. Conditioned and unexamined students (not candidates for entrance) report to their instructors.

Sept. 30. Preliminary examinations for University degrees.

Nov. 18. Stated Meeting of the Board of Trustees.

Nov. 26. Thanksgiving Day.

Dec. 23–Jan. 6. Christmas vacation.

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THE COLLEGE OF NEW JERSEY.

The College originated in the plan of the Rev Drs. Dickinson, Pierson, Pemberton, Burr, with other clergymen, to found an institution "in which ample provision should be made for the intellectual and religious culture of youth desirous to obtain a liberal education, and more especially for the thorough training of such as were candidates for the holy ministry." Its first charter was granted in 1746 by the Hon. John Hamilton, President of His Majesty's Council, and is noteworthy as the first college charter ever given in this country by a Governor or acting Governor with simply the consent of his Council.

A second and more ample charter was granted September 14th, 1748, by the "trusty and well-beloved" Jonathan Belcher, Esquire, Governor and Commander-in-chief of the province of New Jersey. After the war of the Revolution, the charter was confirmed and renewed by the Legislature of New Jersey. The Corporation is styled in that instrument "the Trustees of the College of New Jersey," and they are empowered to hold and administer the property of the College, make laws for the government of the institution, choose its President and Faculty and confer degrees. This Board is a self-perpetuating body, composed of twenty-seven members, with the Governor of the State as President *ex-officio*, or, in his absence, the President of the College. In response to the earnest desire of the petitioners for this charter, that "those of every religious denomination may have free and equal liberty and advantage of education in the said college, any different sentiments in

religion notwithstanding," it was expressly provided that no "person of any religious denomination whatsoever" should be excluded "from free and equal liberty and advantage of education or from any of the liberties, privileges or immunities of the said college on account of his or their being of a religious profession different from the said trustees of the said college."

On April 27th, 1747, the Trustees made a public announcement that they had "appointed the Rev. Jonathan Dickinson, President," and that the college would be opened in the fourth week of May next at Elizabethtown. President Dickinson having died on the 7th of October following, the Rev. Aaron Burr assumed the duties of the Presidency and the college was removed from Elizabethtown to Newark. Soon after, it was removed from Newark to Princeton, where in 1754–55 the first college building was erected. It was proposed to name this building "Belcher Hall" in recognition of Governor Belcher's devoted services. At his request that it should be called Nassau Hall, the Trustees ordered "that the said edifice be in all time to come called and known by the name of Nassau Hall."

The College of New Jersey, as now constituted, includes the John C. Green School of Science. It has its own Faculty of instruction and covers three departments, General Science, Civil Engineering and Electrical Engineering. Degrees are conferred in all these departments, those of Bachelor of Science, Civil Engineer and Electrical Engineer.

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34 Bayard Ave.

THEODORE WHITEFIELD HUNT, PH.D., L.H.D.,
Professor of Rhetoric and English Language.
16 Dickinson St.

WILLIAM MILLIGAN SLOANE, PH.D., L.H.D.,
Professor of History and Political Science.
95 Bayard Ave.

GEORGE LANSING RAYMOND, L.H.D.,
Professor of Oratory and Æsthetic Criticism.
83 Bayard Ave.

SAMUEL ROSS WINANS, PH.D.,
Professor of Greek and Instructor in Sanskrit.
58 University Place.

WILLIAM LIBBEY, JR., D.Sc., Princeton,
Professor of Physical Geography and Histology, and Director of the E. M. Museum of Geology and Archæology.
20 Bayard Ave.

WILLIAM BERRYMAN SCOTT, PH.D., Heidelberg,
Blair Professor of Geology.
56 Bayard Ave.

HENRY FAIRFIELD OSBORN, D.Sc., Princeton,
Professor of Comparative Anatomy.
21 Prospect Ave.

FREDERICK NEWTON WILLSON, C.E.,
Professor of Descriptive Geometry, Stereotomy and Technical Drawing.
Stony Brook.

WILLIAM COWPER PRIME, LL.D.,
Professor of the History of Art.
38 E. 23rd St., New York City.

ALLAN MARQUAND, PH.D., L.H.D.,
Professor of Archæology and the History of Art.
Guernsey Hall.

ANDREW FLEMING WEST, PH.D.,
Giger Professor of Latin and Professor of Pedagogics.
5 Prospect Ave.

ALEXANDER THOMAS ORMOND, PH.D., Princeton,
Stuart Professor of Mental Science and Logic.
109 Canal St.

HERMANN CARL OTTO HUSS, PH.D., Jena,
Professor of Modern Languages and Literature.
32 Chambers St.

ARTHUR LINCOLN FROTHINGHAM, JR., PH.D., Leipsic,
Professor of Archæology and the History of Art and Instructor in the Semitic Languages.
Guernsey Hall.

HENRY BURCHARD FINE, PH.D., Leipsic,
Professor of Mathematics.
41 Prospect Ave.

JOHN HOWELL WESTCOTT, PH.D., Princeton,
Professor of Latin.
12 West Witherspoon Hall.

WOODROW WILSON, PH.D., LL.D.,
Professor of Jurisprudence and Political Economy.
48 Steadman St.

WILLIAM FRANCIS MAGIE, PH.D., Berlin,
Professor of Physics.
27 University Place.

HERBERT STEARNS SQUIER SMITH, C.E.,
Assistant Professor of Civil Engineering.
4 East Witherspoon Hall.

LEROY WILEY McCAY, D.Sc.,
Assistant Professor of Analytical Chemistry and Mineralogy.
6 South Albert B. Dod Hall.

HENRY DALLAS THOMPSON, D.Sc., Princeton,
Tutor in Mathematics.
10 North Albert B. Dod Hall.

MARION MILLS MILLER, LITT.D., Princeton,
Instructor in English and Oratory.
8 North West College.

GEORGE McLEAN HARPER, A.B.,
Instructor in French.
8 South East College.

TAYLOR REED, A.M.,
Assistant in Astronomy.
Observatory, Prospect Ave.

WALTER MEAD RANKIN, PH.D., Munich,
Instructor in Biology and Curator of the Zoological Museum.
60 University Place.

WALTER BUTLER HARRIS, C.E.,
Instructor in Civil Engineering.
245 Nassau St.

SAMUEL THOMSON DODD, A.M.,
Assistant in Physics.
7 Edwards Place.

ALEXANDER HAMILTON PHILLIPS, B.S.,
Demonstrator in Biology.
Stony Brook.

RUDOLPH WEBER,
Assistant in Graphics.
12 Nassau Hall.

HOWARD CROSBY WARREN, A.B.,
Instructor in Logic.
7 Edwards Place.

JOHN MILTON BROOKS, A.B.,
Instructor in Mathematics.
7 Edwards Place.

LOUIS EUGENE LIVINGOOD, A.B.,
Instructor in French and German.
31 Canal St.

ROBERT HEZEKIAH BEATTIE, A.M.,
Instructor in Latin.
27 Old Seminary.

ROBERT WILLIAM BLAKE, A.M.,
Instructor in Greek.
76 Canal St.

CLARKE BENEDICT WILLIAMS, A.B.,
Instructor in Mathematics.
6 South Middle Reunion Hall.

ROBERT ELIOT SPEER, A.B.,
T. H. P. Sailer Assistant in Religious Instruction.
33 Old Seminary.

*FRANKLIN CHAPMAN HILL, PH.G., D.Sc.,
Curator of the E. M. Museum.

ERNEST CUSHING RICHARDSON, PH.D.,
Librarian.
45 Nassau St.

HENRY NEVIUS VAN DYKE, A.M.,
Registrar and President's Secretary.
53 University Place.

ERNST OTTO WILLIAM MILDNER,
Organist.
42 Mercer St.

OTHER COLLEGE OFFICERS.

EDWIN CURTIS OSBORN,
Treasurer.

HENRY GREEN DUFFIELD, A.B.,
Treasurer's Assistant.

ISAAC JACKSON TURNER,
Superintendent of Gymnasium.

MATTHEW GOLDIE,
Proctor.

*Deceased.

STANDING COMMITTEES OF THE FACULTY.

1. *Library.*—Chairman—THE PRESIDENT.
Secretary—THE DEAN.

2. *Schedule of Studies.*—Chairman—THE PRESIDENT.
Secretary—PROF. WEST.

3. *Sanitary.*—Chairman—THE DEAN.
Secretary—PROF. SLOANE.

4. *Assignment of Rooms.*—Chairman—THE DEAN.

5. *College Publications.*—Chairman—THE DEAN.
Secretary—PROF. ORMOND.

6. *Music.*—Chairman—PROF. MARQUAND.
Secretary—PROF. WEST.

7. *Scholarships and Charitable Funds.*—
Chairman—PROF. DUFFIELD.

8. *Teachers and Schools.*—Chairman—PROF. PACKARD.
Secretary—PROF. WINANS.

9. *Out-Door Sports.*—Chairman—PROF. SLOANE.
Secretary—PROF. ROCKWOOD.

10. *University Degrees and Fellowships.*—
Chairman—THE PRESIDENT.
Secretary—PROF. WEST.

11. *Catalogue.*—Chairman—THE DEAN.
Secretary—DR. THOMPSON.

OFFICE HOURS.

THE PRESIDENT will be in the Faculty Room daily from 12 to 1:30.

THE DEAN will be in the Faculty Room daily from 2 to 3.

THE REGISTRAR, College Offices, 2:30 to 4 daily, except Saturday; 9 to 12 Saturday.

THE TREASURER, College Offices, 9 to 1 and 2:30 to 4 daily, except Saturday; 9 to 12 Saturday.

CLASS OFFICERS.

ACADEMIC.

1. Seniors, ... PROF. YOUNG, 16 Prospect Ave.
2. Juniors, ... PROF. DUFFIELD, 23 University Place.
3. Sophomores, ... PROF. PACKARD, College Place.
4. Freshmen, ... PROF. WESTCOTT, 12 W. W. H.

SCIENTIFIC.

1. Seniors, Juniors and Sophomores, B. S.,
   PROF. CORNWALL, 51 Nassau street.
2. Seniors, Juniors and Sophomores, C. E.,
   PROF. MCMILLAN, 40 Bayard Ave.
3. Freshmen, ... PROF. ROCKWOOD, 34 Bayard Ave.
4. All Classes, E. E., . PROF. BRACKETT, 4 Prospect Ave.

Special Students, . . . PROF. FINE, 41 Prospect Ave.

FELLOWS.

Residence

EDGWORTH BIRD BAXTER, A.B.,* . . . . .

Chancellor Green Fellow in Mental Science.

ROBERT PORTER SHICK, A.B., ... *Berlin.*

Fellow in Classical Literature.

GEORGE LOUIS SHEARER, A.B., ... *16 N. E. H.*

Class of 1860 Fellow in Experimental Science.

CLARKE BENEDICT WILLIAMS, A.B., . . . *6 S. M. R. H.*

J. S. K. Fellow in Mathematics.

LOUIS EUGENE LIVINGOOD, A.B., ... *31 Canal St.*

Boudinot Fellow in Modern Languages.

WILLIAM DWIGHT GIBBY, A.B., ... *194 Nassau St.*

Boudinot Fellow in History.

WILLIAM COWPER PRIME, A.B., ... *35 S. E. H.*

E. M. Fellow in Biological Science.

HENRY RUSSELL PEMBERTON, A.M., B.S., *6 Dickinson St.*

Class of 1877 University Fellow in Biology.

JOHN WAHL QUEEN, PH.D. . . . . *43 U. H.*

South East Club University Fellow in Social Science.

GEORGE B. HUSSEY, PH.D.,* . . . . . *37 Nassau St.*

University Fellow in Archæology.

*Resigned.

ACADEMIC DEPARTMENT.

PROFESSORS AND INSTRUCTORS.

I. Department of Philosophy.

1. The Ex-President. *Modern Philosophy and Metaphysics.*
2. The President. *Ethics.*
3. Prof. Ormond and Mr. Warren. *History of Philosophy, Logic and Psychology.*
4. Profs. Scott and Osborn. *Physiological Psychology.*
5. Prof. Shields. *Harmony of Science and Religion.*
6. Prof. Sloane. *History and Political Science.*
7. Prof. Woodrow Wilson. *Jurisprudence and Political Economy.*
8. Profs. Prime, Marquand and Frothingham. *History of Art and Archæology.*
9. Prof. West. *Pedagogics.*

II. Department of Language and Literature.

1. Profs. Cameron, Orris and Winans, and Mr. Blake. *Greek.*
2. Profs. Packard, West and Westcott, and Mr. Beattie. *Latin.*
3. The Dean, Profs. Hunt and Raymond, and Dr. Miller. *English.*

4. Prof. Kargé and Mr. Livingood. *German.*
5. Prof. Hunt. *Anglo-Saxon, Early English and Gothic.*
6. Prof. Winans. *Sanskrit.*
7. Prof. Frothingham. *Semitic Languages.*
8. Mr. Harper and Mr. Livingood. *French.*
9. Mr. Harper. *Italian.*

III. Department of Mathematics and Science.

1. Profs. Duffield and Fine, Dr. Thompson, and Mr. Williams. *Mathematics.*
2. Prof. Young and Mr. Reed. *Astronomy.*
3. Profs. Brackett and Magie, and Mr. Dodd. *Physics.*
4. Profs. Schanck, Cornwall and McCay. *Chemistry.*
5. Profs. Schanck, Macloskie, Scott and Osborn, and Dr. Rankin. *Biology.*
6. Prof. Macloskie. *Botany.*
7. Prof. Libbey. *Histology and Physical Geography.*
8. Profs. Scott and Osborn. *Geology and Palæontology.*

ADMISSION.

ENTRANCE EXAMINATIONS.

All entering students on their arrival must report at the Faculty Room in the College Offices, and be registered. Examinations for admission will be written, with supplementary oral examinations if needed. The first examination will commence in Princeton, on Thursday, June 11th, at 11 A. M., and continue through the afternoon of Friday. The second will commence on Tuesday, September 22nd, at 11 A.M., and continue through the afternoon of Wednesday. Applicants who have any conditions or other deficiencies from the June examination are required to remove them at this time. *Attendance is required at the beginning of the examinations.*

Simultaneously with the June entrance examinations in Princeton, examinations will also be held in the cities of New York, Philadelphia, Pittsburg, Cincinnati, Louisville, Chicago, St. Louis, Omaha, Denver, San Francisco; and at preparatory schools and other cities when necessary. The precise places in which the examinations are to be held can be learned by application to the Registrar. Due notice of these examinations will also be published in leading local newspapers for several weeks in advance.

Examinations at other times and places than those specified are inconvenient and often impracticable, and applicants for examination at other than the regular days are required to pay $10 into the treasury.

FRESHMAN ENTRANCE REQUIREMENTS.

Candidates for admission to the Freshman class are examined in the following books and subjects. It is recommended that the candidates be prepared for examination on the requirements as specified; but equivalents will be accepted.

English.

English Grammar—Whitney, or equivalent; U. S. History—Johnston, Scott, or equivalent.

The writing of a short essay may be required as a part of the examination; the theme for the essay of 1891 will be based on the life and writings of Addison or Rufus Choate.

The attention of preparatory schools is called to the need of a more thorough study of elementary English.

Latin.

Latin Grammar; especially the inflections; the simpler rules for composition and derivation of words; syntax of cases and verbs and structure of the sentence in general, with particular regard to relative and conditional sentences, indirect discourse and the subjunctive; so much prosody as relates to accent, quantity, versification in general, and dactylic hexameter. Cæsar (five books of the Commentaries); Sallust (Catiline or Jugurtha); Virgil (six books of the Æneid); Cicero's Select Orations (six); Arnold's Latin Prose Composition (twelve chapters), or Jones' Exercises in Latin Prose; Geography of Ancient Italy.

Greek.

Greek Grammar, including prosody; Xenophon (four books of the Anabasis), or Greek Reader (Goodwin's), 111 pages; Homer (the first two books of the Iliad, except the Catalogue of Ships); Greek Composition (Jones's Exercises in Greek Prose, or an equivalent—writing with the accents required); Geography of Ancient Greece and Asia Minor. Special stress is laid upon a thorough knowledge of the noun and verb inflections. Candidates will do well to read an additional book of the Iliad, where this can be done without sacrifice of thoroughness in the stated requirements. Some experience in giving written answers to set questions is advantageous.

The Continental pronunciation of the vowels and diphthongs is preferred in both Latin and Greek.

Mathematics.

Arithmetic, including the Metric system; Algebra, through quadratic equations involving two unknown quantities—including radicals, and fractional and negative exponents; Plane Geometry.

PRELIMINARY EXAMINATIONS.

At the examinations in June and September, candidates intending to enter the Freshman class one year later are admitted, on request, to examination on a portion of the subjects required for entrance. Unless in exceptional cases, one must either offer two of the four general subjects, English, Mathematics, Latin, Greek, entire; or, such parts of at least three subjects as are here prescribed, viz.: in *English*, Grammar or U. S. History; in *Mathematics*, Arithmetic, with the Metric system, and either Algebra, or Plane Geometry; in *Latin*, the full amount in Cæsar and one other author, with Grammar; in *Greek*, three books of the Anabasis, with Grammar.

In both Latin and Greek Grammar the examination will be upon noun and verb inflections, syntax of nouns and the simpler rules for syntax of verbs. This examination will be partial only, to be completed the following year.

REQUIREMENTS FOR ADVANCED STANDING.

Candidates for admission to the Sophomore class who have not completed the studies of the Freshman year at another College must first pass an examination on the studies required for admission to the Freshman class.

Candidates for admission to the Sophomore, Junior or Senior class, when coming from another College, are examined only in the studies of the year preceding that which they wish to enter, provided they present evidence that they have passed satisfactory examinations on the previous studies of the curriculum and entrance requirements, or their equivalents, excepting French, Anatomy, Botany and Zoology. Some knowledge of the studies just mentioned is desirable but examination is not required.

The studies of the Freshman year are Latin, Greek, Mathematics, English, Modern Languages, Anatomy. For admission to the Sophomore Class, candidates will be examined on the following minimum amounts or equivalents.

In Greek: Homer, books XVI, XVIII, XXII; Xenophon's Hellenica or Herodotus, 100 pages, half at least to be from Herodotus.

In Latin: Horace, Odes, two books; Livy, books I, XXI, XXII; Cicero, *de Senectute;* Roman History to the time of the Gracchi.

In Mathematics: Algebra completed; Plane and Solid Geometry; Plane Trigonometry.

In English: Trench's Study of Words; Hunt's Discourse, part I, or equivalents.

The studies of Sophomore year include the following required subjects: Latin, Greek, Mathematics, Modern Languages, English, History, Logic, Chemistry, Zoology and Botany; and the following elective studies, of which two must be taken: Latin, Greek, Mathematics, French, German.

The required studies of Junior year are Psychology, English, Physics, Astronomy, Geology, and Political Economy, occupying eight hours a week throughout the year. Three elective studies, occupying six additional hours a week, are to be chosen from the departments of Mental Philosophy, Political Science and History, Classics, Modern Languages, Mathematics and Mathematical Sciences and Natural Sciences.

Some knowledge of the studies just mentioned is desirable but is not required.

No person is admitted to the College as a candidate for the [illegible] of the first term of

On page 24, 3d line from bottom, after "French," insert "or German."
On page 25, strike out lines 11 and 12 from bottom.

date has been a [illegible]
produce a certificate from its President or Faculty that he is [illegible]
from censure in that institution.

No candidate is admitted into the College without examination and a vote of the Faculty.

Immediately after the opening of the College the entering students meet according to announcement for the registration of their names and subscription to the following pledge, required by the Board of Trustees:

We, the undersigned, do individually for ourselves promise, without any mental reservation, that we will have no connection whatever with any secret society, nor be present at the meetings of any secret society in this or any other college so long as we are members of the College of New Jersey; it being understood that this promise has no reference to the American Whig and Cliosophic Societies. We also declare that we regard ourselves bound to keep this promise and on no account whatever to violate it.

ADMISSION TO SPECIAL COURSES.

In exceptional cases, undergraduate students, not members of any one of the four regular classes nor candidates for a degree, are admitted to the privileges of the College, and allowed to take special courses, selected under the direction of the Faculty, in such a manner as to secure full and profitable employment of their time. Such special students undergo a preliminary examination sufficient to ascertain their preparation for the course proposed, and are subject to the same regulations and discipline and to the same examinations in the studies pursued, as other undergraduates. On completing their course they receive certificates of proficiency. These special courses, however, are not offered to those who have failed in the regular course.

UNDERGRADUATE COURSE OF STUDY.

The course for the degree of Bachelor of Arts extends through four academic years and embraces instruction in the three departments of Philosophy, Language and Literature, Mathematics and Natural Science.

It includes two classes of studies, the required and the elective. The required studies are regarded as fundamental and essential in a liberal education and therefore are not left to the student's option. The elective studies, though important, are not all indispensable

and accordingly are left, within definite limits, to the student's choice. Attendance upon all elective studies, when once chosen, as well as upon all required studies, is obligatory. In connection with some departments there are also optional courses, with voluntary attendance.

All the studies of the Freshman year are required, and include Latin, Greek, Mathematics, French or German, English, and Anatomy.

The Sophomore year consists substantially of required studies, which are Latin, Greek, Mathematics, French or German, and English, continued from the Freshman year, and, in addition, General History, Logic, Chemistry, Zoology, and Botany. Opportunity is also given in elective courses in Latin, Greek, Mathematics, French and German, for the student to extend his required work in any two of these directions.

In the Junior year the elective system more properly begins. Nearly two-thirds of the student's time is occupied with required studies, which are Psychology, Political Economy, Physics, English Literature, Astronomy and Geology. In addition to these the student chooses three elective studies, some of them open only to Juniors and others to Juniors and Seniors.

In the Senior year the range of electives is wider, required studies occupying about one-third of the schedule time. The required studies for the present year are Ethics, Evidences of Christianity, Astronomy, and Geology. Besides these the student selects five elective courses of study.

The various elective courses for Sophomores, Juniors and Seniors are detailed on pp. 57–62.

To prevent confusion and secure intelligence of choice on the part of students, the electives are arranged systematically. As a rule no elective course is introduced until the student has passed through a required course in the same general department of study. The Sophomore electives are extensions of subjects already familiar to the student in the required courses, and the Junior and Senior electives, though largely new studies, are preceded by suitable required courses.

A further inducement to coherency in choice is found in the provisions for Honors. Apart from the General Honors awarded for general excellence there are Special Honors in the leading

departments, in both required and elective studies. The effect of this is to concentrate choice upon cognate studies. The General and Special Honors are described on pp. 62, 63.

In the two lower years the instruction is conducted mainly by recitations. The Freshmen and Sophomores recite in four, five or six divisions, constituted according to rank and according to their degree of proficiency in the leading studies. They are divided separately for the classics, mathematics, and modern languages. As the work is thus proportioned to individual ability, rapid progress can be made by those who have special aptitude for certain studies.

Students are required to choose their elective studies for the first term at the beginning of that term, and no changes will be allowed after the close of the third week, and none before that time, except for special reasons approved by the Faculty.

Students are required to hand in writing to the Registrar, on or before the third Monday in January, their choice of electives for the second term, and no changes will be allowed after that date, except for special reasons approved by the Faculty.

If a student be in the lowest Group in any department he shall have liberty to choose his elective studies only in departments in which his previous standing has been above that Group. If he desires any other elective studies he shall send in his proposed list of such studies to the Faculty for approval, and if his choice be not approved, the Faculty shall assign him his electives.

Optional courses, so ordered as not to conflict with the time allotted to the regular instruction of the course, are offered in connection with several departments, under such restrictions as may be prescribed by the Faculty. These courses are designed to benefit those who wish to extend their reading or study in certain branches; they amplify the subjects taken up in the regular course, and in some cases conclude with a special examination upon which is based a certificate of proficiency. A student may take not more than two optional courses at one time; and only one course, if that course occupies more than two hours weekly.

In awarding the Bachelor's degree and assigning the final rank, the student's work for the whole four years is taken into account.

The following is a statement of the various courses of instruction in the three academic departments.

DEPARTMENT OF PHILOSOPHY.

Mrs. Robert L. Stuart, of New York, gave to the College one hundred and fifty-four thousand dollars, to maintain professorships in the Department of Philosophy, embracing Ethics, Logic, Metaphysics, History of Philosophy and Psychology. She gave this in memory of her husband, the late Mr. Robert L. Stuart, and of his brother, the late Mr. Alexander Stuart.

The Professorships now established on this foundation are those of Psychology and History of Philosophy, Ethics, and Mental Science and Logic.

Besides the undergraduate courses given below, the Department also embraces the courses on Contemporary Philosophy, Plato, and other subjects mentioned in connection with the graduate courses.

Metaphysics.

PROFESSOR ORMOND.

This is a two hour elective course in the first term of Senior year. McCosh's *First and Fundamental Truth* is used as a text-book. The exercises in the text-book will be supplemented by a course of lectures.

Psychology.

PROFESSOR ORMOND AND MR. WARREN.

Psychology is a required study occupying two hours a week during the first term of Junior year. McCosh's Treatises on the Cognitive and Motive Powers are used as text-books. One hour a week is given to lectures and the remainder of the time is devoted to recitation.

Physiological Psychology.

PROFESSORS OSBORN AND SCOTT.

This is an elective course for Seniors, consisting of lectures and demonstrations, occupying two hours a week during the first term. It is designed to give a general knowledge of the anatomy and physiology of the nervous system, especially in their relation to

current German, French and English researches upon the localization of functions in the brain.

Professor Osborn opens the course with alternate lectures and demonstrations upon the general structure and evolution of the nervous system, including nerves and nerve cells, the sense organs, the brain and the principal motor and sensory nerve tracts in the brain and spinal cord. The demonstrations accompany a laboratory course of practical study and dissection of the brain and examination of microscopic preparations. Professor Scott continues the subject with lectures upon the physiology of the nervous system, treating the general problems of the origin and transmission of nervous force and the functions of the peripheral nerves, spinal cord and brain. The different theories of the localization of functions in the cerebral cortex are discussed. Experiments illustrating nerve action of different kinds accompany this portion of the course.

History of Philosophy.

PROFESSOR ORMOND.

There are two courses in the History of Philosophy, open to both Juniors and Seniors. The first course, occupying two hours a week during the first term, is upon the Greek and Roman philosophies and follows the development down to the close of the Pagan Schools. Zeller's *Greek Philosophy* is used as a text-book, in connection with which lectures are given.

The second course, occupying two hours a week during the second term, is upon Mediæval and Modern Philosophy. No text-book is used. The course is given in lectures accompanied with discussions and references for collateral reading.

Philosophy since Kant.

PROFESSOR ORMOND.

This is a two hour elective open to Seniors during the second term. It is mainly historical, following the course of philosophical thought in Germany and Great Britain from Kant to the present day. Criticism is introduced, principally in connection with the bearing of the Post-Kantian development on theories of knowledge.

Science and Religion.

PROFESSOR SHIELDS.

This course embraces the study of the sciences so far as connected with revealed religion; their history, classification, and methods; the normal and existing relations of reason and revelation in the sciences; the emerging scientifico-religious controversies; the problem of their adjustment, and the philosophical system issuing from the growing harmony of science and religion.

While this course involves a new contribution to the scientific evidences of religion as taught in Christian colleges, it aims also to promote that sound ultimate philosophy which results from the correlation of reason and revelation and looks forward to the gradual purification and completion of human knowledge.

It is an elective course extending through the second term of the Senior year. The instruction is given entirely by lectures, with occasional recitations and written examinations.

Elements of Logic.

PROFESSOR ORMOND AND MR. WARREN.

This is a required study during the second term of Sophomore year. The course embraces (1) Deductive Logic—comprising the laws of discursive thought as involved in notions, judgments and reasoning. The Syllogism and other forms of reasoning are discussed. McCosh's Manual of Logic is used as a text-book. (2) A few exercises are given in the elements of inductive reasoning. The entire course is accompanied with discussions and practical exercises.

Advanced Logic.

PROFESSOR ORMOND AND MR. WARREN.

This course is a first term elective open to both Juniors and Seniors. Professor Ormond lectures one hour a week on the Theory of Logic and devotes one hour to Deductive Logic, using Mill's treatise as a text-book.

Mr. Warren gives an alternate course on Symbolic Logic and the Theory of Probability. Students may choose either of the courses.

Ethics.

THE PRESIDENT.

This is one of the required studies of the Senior year. Two hours a week are devoted to it during the first term. Instruction is given by lectures accompanied by the use of Calderwood's Handbook of Moral Philosophy as a text-book. The lectures deal with both Theoretical and Practical Ethics and embrace such topics as the foundation of moral obligation, the will, conscience, the nature of virtue, and the moral law. Special attention is given to recent ethical discussions, and portions of representative ethical treatises are recommended for collateral reading.

Evidences of Christianity.

THE PRESIDENT.

This is a required course, occupying one hour a week during the second term of the Senior year.

It is an exhibition or outline of the exceptional evidence that accredits the Christian religion; its aim being to show that Christianity is and that anti-Christian systems are not capable of rational defence.

History and Political Science.

PROFESSOR SLOANE.

*1. Greek History. Freshman year. This course is given by Professor Winans.

*2. Roman History, one hour a week. First term, Freshman year. This course is given by Professor Westcott.

*3. General Sketch of History (Freeman's). Recitations, lectures and discussions. Two hours a week. First term, Sophomore year.

*4. Historical Geography. Eight lectures. Sophomore year. This course is given by Professor Libbey.

These courses, marked with an asterisk, must be taken by every candidate for a degree of Bachelor of Arts. The following are elective and may be given but once in two years according to the demand for them.

5. I. *a.* Ancient Oriental History. *b.* Institutions of Greece and Rome. Lectures and recitations. Two hours a week, first term. Open to Juniors and Seniors. To be given 1891–92.

6. II. *a.* Mediæval History. *b.* European History to the end of the seventeenth century. Lectures and recitations. Two hours a week, second term. Open to Juniors and Seniors. To be given 1891–92.

7. I. Constitutional and Political History of England since 1688. Lectures and recitations. Two hours a week, first term. Open to Juniors and Seniors. Given 1890–91.

8. II. American Political History. Lectures and recitations. Two hours a week, second term. Open to Juniors and Seniors.

9. Comparative Politics. The Origin and Theory of the State. Lectures and Recitations. Two hours a week, first term. Open to Seniors.

10. The History of Political Theories. Lectures and recitations. Two hours a week, second term. Open to Seniors.

11. Contrasts between Parliamentary and Congressional governments. Papers and discussions. Two hours a week. First or second term. Open to Graduate students.

Jurisprudence and Political Economy.

PROFESSOR WOODROW WILSON.

1. Public Law, its historical derivation, its practical sanctions, its typical outward forms, its evidence as to the nature of the state and as to the character and scope of political sovereignty. Lectures, recitations, collateral reading. Two hours a week, first term, alternate years, alternating with Course 2. Given 1890–91. Junior and Senior elective.

2. General Jurisprudence, the philosophy of law and of personal rights. Lectures, recitations, collateral reading. Two hours a week, first term, alternate years, alternating with Course 1. To be given 1891–92. Junior and Senior elective.

3. American Constitutional Law, state and federal. Lectures, recitations, collateral reading. Two hours a week, second term, alternate years, alternating with Course 4. Given 1890–91. Junior and Senior elective.

4. International Law. Lectures, recitations, collateral reading. Two hours a week, second term, alternate years, alternating with Course 3. To be given 1891-92. Junior and Senior elective.

5. Administration. Lectures and collateral reading. Two hours a week, second term, alternate years, alternating with Course 6. Given 1890-91. Senior elective and open to Graduate students.

6. English Common Law. Lectures and collateral reading. Two hours a week, second term, alternate years, alternating with Course 5. To be given 1891-92. Senior elective and open to Graduate students.

7. Political Economy. Elementary course. Recitations (Walker's Elementary Political Economy) and lectures. Two hours a week, second term. Required of Juniors.

8. Political Economy. Advanced Course. Lectures and recitations. Collateral reading. Two hours a week, first term. Senior elective.

9. Roman Law. The Institutes of Justinian and Morey's Outlines. Readings, lectures and recitations. Two hours a week, elective, both terms of Senior year. Open to Graduate students. This course is given by Professor Westcott. (Vide p. 40.)

Pedagogics.

PROFESSOR WEST.

This is an elective course in the Senior year, and occupies two hours weekly in the second term. It consists of lectures supplemented by text-book instruction, and developes the subject in its historical, theoretical and practical relations. A thesis is required at the end of the course.

Archæology and the History of Art.

PROFESSORS PRIME, MARQUAND AND FROTHINGHAM.

I. PUBLIC LECTURES:

Provision will be made for a short course of public lectures by the professors of the department.

II. GENERAL COURSES (open to Juniors and Seniors):

(A) *Ancient Art.* Professor Marquand conducts a general course on Ancient Art, including the Art of Egypt, Assyria, Phœnicia, Greece and Rome. Two exercises a week during the first term. Text book, Reber's *History of Ancient Art.*

(B) *Mediæval Art.*. Professor Frothingham conducts a general course on Mediæval Art, including that of the Early Christian, Romanesque and Gothic periods. Two exercises a week during the second term. Text book, Reber's *History of Mediæval Art.*

III. SPECIAL COURSES (open to graduates and to undergraduates who have taken at least one of the general courses in this department).

*(1) *Oriental Archæology.* Professor Frothingham gives a special course in the Archæology of Egypt and Assyria, and Oriental influences on Greece. Two exercises a week during the first term.

(2) *Greek Architecture.* Professor Marquand gives a special course on the History of Greek Architecture. Two exercises a week during the second term.

*(3) *Greek Sculpture.* Professor Marquand gives a special course on the History of Greek Sculpture. Two exercises a week during the first term.

(4) *Greek Industrial Arts.* Professor Marquand gives a special course on the History of Greek terracottas, vase-paintings, bronzes and coins. Two exercises a week during the first term.

*(5) *Greek Mythology in Art.* Professor Marquand gives a special course on Greek Mythology as illustrated by the monuments. Two exercises a week during the second term.

*(6) *Christian Archæology.* Professor Frothingham gives a special course on the Subjects and Symbolism of Early Christian and Mediæval Art. Two exercises a week during the second term.

(7) *Christian Architecture.* Professor Frothingham gives a special course on the history of Early Christian and Mediæval Architecture up to the close of the Gothic period. Two exercises a week during the second term.

(8) *Mediæval Industrial Arts.* Professor Frothingham conducts a special course in the smaller arts of the Middle Ages, such as sculpture in metal, ivory and wood; enamels; tapestries; glass painting; mosaics; miniatures. Two hours a week during the first term.

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*Courses marked with an *asterisk* may be given in alternate years in the place of Courses (2), (4), (7) and (8).

DEPARTMENT OF LANGUAGE AND LITERATURE.

Greek.

PROFESSORS CAMERON, ORRIS AND WINANS, AND MR. BLAKE.

Freshman Year.

The Freshman class has five hours of Greek a week in the first term, and four in the second.

There are two courses:

POETRY.—Homer: The Iliad, Books XVI, XVIII, XXII; Epic forms and syntax; prosody and scanning; the Homeric question; antiquities and mythology.

PROSE.—Ordinarily, in the first term Xenophon's Hellenica, in the second Herodotus. The parts selected are those which are most interesting and have especial historical importance,—tales from the earlier books of Herodotus, the rise of the Persian monarchy, the Persian wars against Greece, the closing scenes of the Peloponnesian war. This is followed by a short course of outlines of Greek history, in English, intended to review and supplement the previous course and to furnish a comprehensive view of the whole subject. The class is trained in reading at sight, and with the advanced sections a considerable amount of Herodotus is thus read.

Also, throughout the year, review of Greek grammar, and of Greek composition, with written exercises and practice in translating continuous passages of English into Greek.

Sophomore Year.

Greek has a required course of two hours a week and an additional elective course of two hours a week.

In the first term, the required course is Demosthenes: the Olynthiacs and Philippics, together with the study of the political condition of Greece in the time of Demosthenes and of Demosthenes's life and influence. Also, Greek prose composition on the basis of the text of Demosthenes, including analyses in Greek of the Olynthiacs and Philippics; dictations on Greek lexicology, stating and

explaining the laws pertaining to the formation, derivation and definition of the words of the language. Professor Orris.

The elective course is Æschylus; the Prometheus Vinctus, with a history of the origin of tragedy, analysis of the plot, and sketch of the life of Æschylus. Professor Cameron.

In the second term, the required course consists of a further reading of Demosthenes, followed by the Apology and Crito of Plato; together with Prose composition on the basis of the text studied, as in the first term. Professor Orris.

The elective course (1890-91) is Xenophon's Memorabilia. A selection is made of the more interesting parts of the memoirs, especially of such as are important to subsequent philosophical study. In addition most of the work is read at sight. Such general subjects are treated as the life of Xenophon; review of his works; his relations to Socrates as pupil and biographer; review of the political history of the period; the Socratic system of ethics; the method and influence of Socrates as a teacher. There may be added also the reading of Xenophon's Symposium, or parts of the Clouds of Aristophanes. Professor Winans.

In alternate years the course may be Lucian.

Junior Year.

Greek is an elective study in Junior year, two hours a week, conducted in the first term by Professor Winans, in the second by Professor Orris.

Professor Orris reads the Protagoras of Plato and lectures on the Platonic philosophy. As an alternate course the Prometheus Vinctus or the Agamemnon of Æschylus, with lectures on the origin and character of the Attic Drama and its relations to modern literature.

Professor Winans reads two plays of Aristophanes, the Clouds and the Frogs in 1890–91, and gives lectures on the Dionysus myth and worship; the development and history of comedy; review of Aristophanes's extant works and the fragments; Aristophanes's literary criticisms, and his attitude toward the philosophical, social and political movements of his time; the presentation of comedies; the metres of comedy. In alternate years (1891–2) the author will be

Thucydides, with a course of lectures on the history of the period covered by Thucydides's work, the life of Thucydides, criticism of his style and merits as a historian.

Senior Year.

There are three independent elective courses in Greek open to Seniors in both terms.

I. Sophocles, the Œdipus Tyrannus. Criticism of the play, the plot, the significance of the tragedy. Description of the Greek theatre. Lectures on the physical geography of Greece as affecting the character and language of the people; the origin of the Greek alphabet; the characteristics of the Greek language; rise and character of Greek literature; epic poetry; lyric poetry; history; tragedy; comedy; oratory; philosophy; Greek antiquities; manners and customs; remains of cities and buildings. Throughout the year. Professor Cameron.

II. Aristotle, The Nicomachean Ethics with prolegomena and dictations. The first term. Professor Orris. In the second term Professor Orris's course in Plato (or Æschylus) is open to both Seniors and Juniors. [See Junior year.]

III. In the first term Professor Winans's course in Aristophanes (or Thucydides) is open to both Seniors and Juniors. [See Junior year.] In the second term, selections from the Greek Lyric poets with lectures and collateral reading. Professor Winans.

SCHOOL AT ATHENS.

This College, in connection with others, assisted in establishing and contributes to the support of the American School of Classical Studies at Athens. This school affords facilities for archæological and classical investigation and study in Greece, and approved graduates of this College are entitled to all its advantages free of tuition. Professor Sloane represents Princeton in its Managing Committee.

Latin.

PROFESSORS PACKARD, WEST AND WESTCOTT, AND MR. BEATTIE.

Freshman Year.

The Freshman Class has four hours of Latin a week, all required. The authors read are: Livy, Books I, XXI, XXII; Cicero:

De Senectute and De Amicitia; Horace's Odes. Optional, Nepos and Ovid. Roman History to the period of the Gracchi is studied in connection with Livy. Latin Composition in oral and written exercises.

Sophomore Year.

The Sophomore Class has two hours of required Latin and, in addition, two hours elective throughout the year.

Professor Packard's required course in the first term, with half of the class, is Cicero de Officiis, with Lectures illustrative of the ethical views and life of the period. In the second term, with half of the class, Cicero de Oratore, or Horace's Satires and Epistles, with Lectures on the Augustan Literature.

Professor West's required course in the first term is Terence: Andria and Adelphoe, and Selections from Catullus. Second term; Terence: Heauton Timorumenos and Phormio, and Selections from Catullus. Collateral topics investigated are the principles of language-change embodied in the metres; the literary obligations of Terence to Plautus, and of both to early Latin literature and the Greek comedians; the social life of Rome in the second century B. C.; and the relations of ancient to modern comedy.

Professor Westcott's elective course is, first term, Tacitus: Agricola or Germania and Selections from the Annals or Histories. Special study of Tacitus's language and style, and the political history of the Early Empire. Second term: Study of the forensic career of Cicero and reading orations illustrative thereof; and with a picked division of the class, study of the history of the Civil Wars, from original authorities.

Junior Year.

Elective courses only, two hours a week through the year. Professor Packard, in the first term, reads with the class (Juniors and Seniors) selected Satires of Juvenal, and selected Letters of Pliny, with a course of lectures upon the Earlier Empire, illustrating especially its moral and religious aspects in contrast with Christian truth and life. Optional collateral reading, Seneca: Epistolae ad Lucilium.

Professor West, in the second term, reads, with Juniors and Seniors, Plautus: Mostellaria and Rudens. Sight reading, Quintus Curtius, probably.

Senior Year.

Elective courses only, two hours a week, each, through the year. Professor Packard, in the first term, Cicero De Natura Deorum. In the second term, Lucretius, with Lectures upon the poem, and also upon the general principles of Linguistics.

Professor West, first term, Cicero's Brutus and Quintilian's De Institutione Oratoria. Second term. Course in Plautus. Open to both Seniors and Juniors. See above.

Professor Westcott, through the year: Institutes of Justinian (Holland's text), Morey's Outlines of Roman Law and Lectures. (Vide p. 34.)

English Literature.

THE DEAN.

The study of English Literature is pursued throughout the Junior and Senior years; in the former as a required and in the latter as an elective course.

Junior Year.

The required course occupies two hours a week. In the first term the subjects to be studied are Chaucer, Spenser, Early Prose Writers, Rise of the English Drama, Dramatists before Shakespeare, especially Marlowe; Dramatists of the later period, especially Ben Jonson and Webster.

In the second term the authors discussed are Bacon, Dryden, Milton, Sir Thomas Brown and the chief writers of the Queen Anne Period. The required course ends with the study of the Literary Restoration in which the English Novelists and Historians, and Gray, Cowper, Burns, Wordsworth, Keats and Shelley are considered.

Senior Year.

Two hours a week are assigned to the elective course. In the first term, the course is wholly occupied with Shakespeare. Selected plays, especially the great tragedies, are studied in the class-room and the course is supplemented by lectures on other plays. In addition to the study of Shakespeare, lectures on folk-lore may be given in this course.

In the second term, the Victorian Literature, including leading American authors, will be treated. The authors considered will be Tennyson, Browning, Arnold, Carlyle, Thackeray, and in American Literature, Irving, Hawthorne, Bryant, Longfellow, Lowell, and Prescott.

Essays also are required from both the Junior and Senior classes.

English Language and Discourse.

PROFESSOR HUNT AND DR. MILLER.

Freshman Year.

The Elements of Discourse and of English Philology are studied on the basis of text-book and lecture. Such topics as diction, structure, figures, the leading laws, processes, forms and qualities of discourse are discussed; as, also, the component elements of our English speech. Text-books.—Lounsbury's English Language (Part I); Hunt's Principles of Written Discourse.

Sophomore Year.

The Standard Types of English Prose Style are studied and their practical exemplification noted in representative English writers. A Course of Lectures is, also, given on the Historical Development of the English Language. Text-books and Authorities—Marsh's Lectures on the English Language; Marsh's Origin and History of the English Language; Studies in Literature and Style.

Occasional Lectures are offered on Miscellaneous Topics connected with Discourse and English Philology. Also, on Books and Reading, as related to the needs of the writer and his use of the Library.

Junior Year.

The study of Anglo-Saxon and Early English, as an elective branch, is begun. On the basis of March's and Sweet's text-books, the student is drilled in the forms and principles of grammar and taught to read with ease the best prose and poetry of First English. In connection with this grammatical and textual study, instruction is given by lecture on a large variety of subjects—philological and historical—rightfully included in such a course. The students are also encouraged to private reading on any of the topics presented in

the class-room. Beôwulf and Caedmon are read as an advanced course. In Middle English, Chaucer and Piers Plowman are studied on the basis of texts given in Clarendon Press Editions.

Text-books.—Sweet's Anglo-Saxon Reader; Harrison and Sharp's Beôwulf; Kent's Cynewulf (Elene); Hunt's Caedmon (Exodus and Daniel); Morris and Skeat's Specimens of Early English (Part II); Morris and Skeat's Chaucer (Prologue, etc.); Skeat's Piers the Plowman.

Oratory and Æsthetic Criticism.

PROFESSOR RAYMOND AND DR. MILLER.

Freshman Year.

First term, weekly lectures and drill in elocution, explaining the meanings and teaching the methods of gesture and vocal emphasis, with readings and declamations required from all the class. Also, instruction in the methods of dividing and elaborating oratorical themes. Text-book, Raymond's Orator's Manual.

Sophomore Year.

Exercises according to degrees of proficiency. Two private rehearsals of declamations and one written oration required from all.

Junior and Senior Years.

Oratorical delivery and composition, and the analysis and illustration of themes. In Junior year one written oration and two rehearsals in delivery are required from all; in Senior year two written orations, two rehearsals, and public speaking before the College in which there are contests for various prizes in oratory, poetry and disputation. (See heading "Prizes and Competitive Scholarships.")

There is an endeavor to adapt the course throughout the four years, to the individual needs of students; and opportunities are afforded for voluntary work, together with training, thorough and complete, in vocal culture, and instruction in the principles of æsthetic criticism, as applied to elocution and rhetoric and to poetry and the other arts.

Exercises in English Composition.

These are prepared under the supervision of the professors of English literature, discourse and oratory, and are carefully examined and corrected. The requirements are: Freshman year, three essays; Sophomore year, one essay, a written debate and a written oration; Junior year, two essays and an oration; Senior year, one essay and two orations. In every year of the course several prizes or honorary appointments are given for excellence in essay writing and in public address, either by the College, or by the Cliosophic or American Whig Societies, acting through committees appointed from their own members in the Faculty. (See heading "Prizes, Scholarships.")

French.

MR. HARPER AND MR. LIVINGOOD.

Freshmen may choose between required French and German, both courses beginning with second term, this year. Required French continues two hours a week, until second term of Sophomore year. In 1889-90 the Freshman text-books were Whitney's Grammar and Super's Preparatory Reader. The books read by the Sophomores were Daudet's La Belle Nivernaise, Dumas's Un Drame de la Mer, Molière's L'Avare, and Musset's Fantasio. Students are carefully exercised in pronunciation.

There is also a two-hour elective course, throughout Sophomore year, in which greater attention is paid to composition and etymology, and a larger amount of contemporary prose is read. Last year this elective class read Augier's Le Gendre de M. Poirier, Labiche's La Grammaire, Halévy's L'Abbé Constantin, Daudet's Lettres de Mon Moulin, and Bks. I, II, and V of La Fontaine's Fables, besides memorizing poems and writing essays in French on subjects connected with French literature or history.

An optional class of Sophomores meet their instructor once a week in the evening. Last year they read Molière's Les Précieuses Ridicules and Le Médecin Malgré Lui, and George Sand's La Mare au Diable.

An advanced elective course is open to Seniors and Juniors, two hours weekly. It is an alternating course, extending over two years, and deals historically with classical French literature. The first half of the course extends from Corneille to Voltaire inclusive; the second half (1890–91) from Voltaire to our day, comprising Beaumarchais, Alfred de Musset, Victor Hugo, and Lamartine. The course is illustrated by lectures, and collateral reading of biographical and critical works is required, particularly the essays of Sainte-Beuve. Last year the texts read were Corneille's Cid and Cinna, Racine's Britannicus, Molière's Les Précieuses Ridicules and Le Misanthrope, and Voltaire's Le Siècle de Louis XIV.

Italian.

MR. HARPER.

Italian is a single-year, two-hour elective course, open to Seniors and Juniors. Grammatical study and elementary reading occupy the first term. Montague's Italian Manual is used. In the second term the class will read selections from Dante. As considerable attention is devoted to the comparative grammar of the Romance languages, students who elect this course should possess an accurate knowledge of French and Latin.

German.

PROFESSOR KARGÉ.

Sophomores, First Term. (Elementary Course). Acquisition of grammar forms, rules pertaining to sounds practically applied. Prose Composition. Second Term. Prose Readings. Höher als die Kirche, Goethe; Hermann und Dorothea, three cantos; Stein's Prose Composition.

Minor Course. Junior and Senior elective. First Term. Classics. Goethe: Hermann und Dorothea studied critically; Egmont; Schiller: Wallensteins Lager. Prose Readings. Koch: Ueber die Bakterien; Freytag: Aus dem Mittelalter. Stein's Prose Composition through the year.

Lectures. A synoptical view of the history of the language, its mediæval Epics and Lyrics and Literature of the classical period.

Students of the Minor Course will have the option to join a bi-weekly reading and conversational class, in which Goethe's Faust will be studied critically.

Sanskrit.

PROFESSOR WINANS.

Sanskrit is a two-hour elective course in Senior year. Students are requested to advise with the professor before electing it. In the grammatical study special attention is paid to the bearing of the language on philology and comparative grammar. The various phenomena of the language, its sounds, roots, forms, inflections, are considered with some detail in relation to those of other Aryan tongues. The following is an outline of the early stages of the course: Sanskrit Primer (Perry), a series of graded lessons on the plan of Greek and Latin first lessons; reading of several books of the Nalopâkhyânam, an episode in the great Hindoo epic, the Mahâbhârata, with review of Sanskrit grammar (Whitney's); then, selections from the Hitôpadeça.

Semitic Languages.

PROFESSOR FROTHINGHAM.

This course consists at present of an elective in Hebrew running through Junior and Senior years.

Elementary Course. The first year is devoted to elementary work and the study of Hebrew grammar, with readings in Genesis and Psalms.

Advanced Course. In the second year a large part of the time is given to a rapid reading of texts and the grammatical training will be supplemented in the second term by studies in comparative Semitic philology with especial reference to Syriac, Arabic and Assyrian.

There will be two exercises every week, both in the elementary and the advanced class. The elementary course is open to Juniors and Seniors; the advanced, to Seniors and Graduates.

DEPARTMENT OF MATHEMATICS AND NATURAL SCIENCE.

Mathematics.

PROFESSORS DUFFIELD AND FINE, DR. THOMPSON, AND MR. WILLIAMS.

In the Freshman year there are two exercises a week throughout the year in algebra under Professor Fine or Mr. Williams, and two exercises a week throughout the year in geometry and plane trigonometry under Dr. Thompson or Mr. Williams.

The text-books in algebra are Wells's College Algebra, supplemented by lectures on the theory of equations, and Fine's Number-System of Algebra. In geometry the text-book is Wentworth's New Plane and Solid Geometry, supplemented by a brief course in Euclid's Elements. Loomis's Trigonometry is the text-book in trigonometry.

The *required* course in mathematics of the Sophomore class is two hours a week throughout the year, and includes the following studies: analytical trigonometry, mensuration, navigation, spherical trigonometry and the elements of analytical geometry. The *elective* course, of four hours a week throughout the year, includes the same studies as the *required*—the course in analytical trigonometry and analytical geometry being more extended—and in addition the elements of the differential and integral calculus. The text-books are Loomis's Analytical Trigonometry and Bowser's Analytical Geometry and the Calculus. Professor Duffield will have charge of the *elective* class, Dr. Thompson of the class in the *required* course.

To Juniors the choice is offered of two elective courses in Mathematics. In each there are two exercises a week throughout the year.

(1) A course conducted by Professor Duffield with Bowser's Analytical Geometry and Calculus as the text-books.

(2) A course in Modern Geometry, conducted by Professor Fine. The text-book is Salmon's Conic Sections, supplemented by lectures on modern synthetic geometry, in particular the geometry of position. This course is open to Seniors also.

To Seniors either or both of the following elective courses are open:

(1) The course already described as Junior (2).

(2) A course in the differential and integral calculus based on Williamson's text-books, with lectures on the calculus of the complex variable and on the applications of the calculus to mathematical physics. Two hours a week throughout the year.

Also any one of the following *University* courses is open to a student who has taken Junior (2) in his Junior year and elects Senior (2) in his Senior year:

(3) A course in differential equations two hours a week during first term. Text-book, Forsyth's Differential Equations, supplemented by lectures.

(4) A course in the theory of functions based on the treatises of Durége and Clebsch and Gordan. Two hours a week during second term.

(5) A course in the geometry of the higher algebraic curves and surfaces based on Salmon's Plane Curves and Geometry of Three Dimensions. Two hours a week throughout the year.

These Senior courses are conducted by Professor Fine.

Astronomy.

PROFESSOR YOUNG AND MR. REED.

Junior Year.

General Course—Required.

The course occupies two hours weekly during the first term with an examination at the close of the course.

The subject is treated in an elementary manner, mainly from the descriptive point of view, the principal topics being methods of finding latitude, time and longitude, the earth in its astronomical relations, the moon, the sun and eclipses, the planetary system and the stars.

The aim of the course, which is conducted by a combination of lectures and recitations, is to give an understanding of the leading principles of the science, with a knowledge of its most important facts, especially of such as are of recent discovery; the higher

mathematics of the subject are not attempted. Young's General Astronomy is used as the text-book for recitation and reference.

The members of the class have opportunities for examining the most interesting celestial objects with the large telescope of the Halsted Observatory.

Senior Year.

General Course—Required.

The present year this course occupies two hours weekly during the first term, and is identical with that taken by the Juniors.

Hereafter it will probably be replaced by a more extended course offered as an elective.

Practical Astronomy—Elective.

One exercise weekly during the whole year. Text-book, Loomis's Practical Astronomy. The exercises consist of lectures upon the various instruments and their uses, with recitations from the text-book and the discussion of the observations made by the class.

When the weather permits, each member of the class is required to spend from two to six hours weekly in making and reducing observations.

The principal subjects embraced in the course are the following:

(1.) *The Sextant and Reflecting Circle.* Theory of the instrument, and its adjustments. Its use in the determination of latitude and time by measured altitudes of the sun or of stars.

(2.) *The Transit Instrument.* Theory of the instrument, and determination of the local time by star transits.

(3.) *The Zenith Telescope.* Theory of the instrument, and the determination of latitude by Talcott's method.

(4.) *The Prime Vertical Instrument.* Its theory, and its use in the determination of latitude.

(5.) *The Meridian Circle.* Theory of the instrument, and of the errors of graduated circles. Determination of star places.

(6.) *The Universal Instrument or Astronomical Theodolite.* Determination of azimuth, and of latitude and time together.

(7.) *The Equatorial.* The theory and adjustment of the instrument. Its use in determining the place of a comet by differential observations. Measures with the filar micrometer. Spectroscopic observations upon the sun and the solar prominences.

(8.) *Miscellaneous and Subsidiary.* Micrometers. The Spirit-Level. Personal-equation. Use of Ephemerides. Refraction corrections. Treatment of equations of condition, and determination of probable error. Reduction of star places.

Physics.

PROFESSORS BRACKETT AND MAGIE, AND MR. DODD.

Junior Year.

COURSE 1. *General Physics, Required:*—This course occupies two hours a week throughout the year. It is required of all those who do not take Course 2. Anthony and Brackett's Elementary Text-Book of Physics is used as the basis of the course. The main facts, laws and theories of Physics are studied and illustrated by experiment.

COURSE 2. *General Physics, Elective:*—This course occupies four hours a week throughout the year. Those electing it are excused from taking Course 1. The text-book used is Anthony and Brackett's Elementary Text-Book of Physics. While the course covers the same ground as Course 1, the time given to it makes it possible to present the subject more thoroughly and to illustrate it more fully by experiment.

Candidates for Honors in Mathematics and Mathematical Sciences must take Course 2. Students who have not taken Course 2 cannot be admitted to the elective courses in Physics of the Senior year.

Senior Year.

The courses of the Senior year are elective. They may be taken only by those who have pursued Course 2 in the Junior year.

COURSE 3. *Practical Physics:*—This course involves practical work in the Physical Laboratory and affords opportunity for the extended study of special topics. The subjects studied are, in the first term, Mechanics, Molecular Mechanics and Heat; in the second term, Magnetism and Electricity. Stewart and Gee's Elementary Practical Physics, Vols. I and II, is used as a manual, and frequent reference is also made to other text-books and to original memoirs. One hour a week is used for recitation and lecture,

and at least two hours a week are ordinarily given to laboratory work. The laboratory hours are not necessarily those assigned the course in the Schedule, but may be fixed by agreement for some other time.

COURSE 4. *Theoretical Physics*:—This course occupies two hours a week. It consists of the reading and discussion of treatises on special departments of Physics, with lectures and experimental demonstrations. The subjects studied are, in the first term, Heat; text-book, Maxwell's Theory of Heat; in the second term, Optics; text-book, Glazebrook's Physical Optics.

Chemistry.

PROFESSOR SCHANCK.

Students in the Academic Department attend a required course in general chemistry throughout the first term of Sophomore year, and may attend an elective course during the first term of Junior year.

The course of instruction in general chemistry occupies two hours in the class-room each week, and in this course the attempt is made to give quite fully the leading principles and facts of general chemistry, enforced by carefully prepared experimental illustrations. Besides these table illustrations, free use is made of lantern projections. The advantage of taking notes and of reading, in connection with the lectures, such works as Roscoe's, Remsen's, Richter's, Wurtz's, Miller's, and Roscoe and Schorlemmer's, is appreciated and urged upon the class.

Laboratory Chemistry.

PROFESSORS CORNWALL AND MCCAY.

This course in chemistry constitutes an elective study during the first term of the Senior year. The course includes lectures by Professor Cornwall, with occasional recitations, and also work in the Laboratory under Professor McCay. Qualitative chemical analysis is first taken up, the students learning to detect single bases and acids, acquiring thereby sufficient training to pursue further the study of qualitative analysis without supervision, should they desire

to do so. At the same time they are required to explain fully, by chemical formulas and written explanations, all of the reactions involved in making the test.

During the latter part of the term, experiments illustrating principles of general chemistry and chemical physics are first performed by the students, after which the most important classes of organic compounds are studied, and finally a few special examinations are made, such as: analysis of potable waters; examinations of milk; study of the general properties of the alkaloids, with a few characteristic tests; properties of disinfectants. The object of the course is to train the student, as far as possible, in chemical manipulation, by means of experiments which shall both illustrate chemical principles and furnish practical knowledge likely to be of use in any subsequent professional or scientific study.

The course requires five or six hours a week; three or four hours being generally devoted to laboratory work, and two hours to lectures and recitations.

Special students will not be admitted to this course unless proficient in general chemistry.

Physical Geography.

PROFESSOR LIBBEY.

This course occupies two hours each week throughout the second term of Senior year, as an elective study. It consists of the study of the earth in the age of man, and comprises two parts:

A. THE GEOGRAPHY OF NATURE, or physical geography proper.

1. The earth in the solar system; astronomical geography, especially with reference to climatology.

2. The earth as a whole, or physics of the globe; its form, dimensions, density and weight; its proper temperature, volcanoes, geysers and earthquakes; its magnetism.

3. The surface of the earth:

   a. The lands, their arrangement; morphology of the continents; laws of relief.

   b. The waters, inland waters and continental drainage, erosion; oceanography, tides and marine currents, surface and deep sea temperatures.

c. The atmosphere, climatology, laws of distribution of temperature; winds and storms; rain, snow, ice and glaciers.

4. Laws of the distribution of plant and animal life.

B. GEOGRAPHY OF MAN. The relations of physical geography to the history of mankind.

a. Human races; the historic races and their function in history; characteristics and law of distribution, as contrasted with the distribution of life in nature.

b. The continents as instruments for the development of human society; their special functions in the progressive development of mankind.

Lectures, with written recitations, and examination. The course is abundantly illustrated by maps and diagrams and the lantern is used to illustrate the phenomena treated of by means of a series of views from nature, numbering upwards of four thousand.

Text-books recommended: — Physical Geography, Guyot; Earth and Man, Guyot. A collateral course of reading is outlined as the study proceeds.

Geology.

PROFESSOR SCOTT.

1. Elementary Course.

This course is a required one, and occupies two hours a week during the second term of Junior year. It is designed to give a general outline of the science, including dynamical, structural and historical geology, and exhibiting the history of the earth and its inhabitants, and the relations between the present order of things and the past. The course, which consists mainly of lectures, is also intended to serve as an introduction to the subject for those who desire to pursue it more thoroughly.

Text-book recommended: Geikie's Class Book of Geology.

2. Elective Courses.

a. Physical Geology.—This course will be given on alternate years, alternating with course *b*. Given 1891–92. It is open to both Juniors and Seniors, two hours a week, throughout the year, and covers the subjects of dynamical and structural geology. Provision

is made for laboratory instruction and practical work in the field, including geological surveying, map making and the like.

Text-book: Green's Geology for Students.

b. Historical Geology.—This will be given on alternate years with course *a*, and like it, occupies two hours a week and is open to both Seniors and Juniors, thus enabling the student to make a thorough survey of the whole subject. This course includes the detailed study of the formations, their stratigraphy and palæontology, distribution, and economic products.

Text-book: Dana's Manual of Geology.

Courses in Biology.

The required course in Biology is designed to give all academic students a general knowledge of the structure and functions of the human body and of the principles of Zoology and Botany; these subjects are required studies of the Freshman and Sophomore years, consisting of lectures, illustrated by models and diagrams and accompanied by some practical exercises upon animals and plants. The second, or higher, division of the course is entirely elective and embraces a number of related lecture and laboratory courses extending through the Junior and Senior years; they cover the theoretical study of Vertebrate and Invertebrate Morphology, Embryology and Histology, Vertebrate Palæontology, with personal instruction in practical biological methods and some simple original investigation in the form of a graduation thesis. The purpose of these courses is to offer the main facts and principles of Biology in theoretical and practical training as a foundation either for the study of medicine or for the advanced University courses in preparation for teaching and research.

Students entering for *Special Honors in Biology* must have attained a rank equivalent to II Group in Courses I and II, or qualify themselves by a special examination for this rank, and pursue courses III–VI inclusive under the usual regulations of Special Honor work. In place of the separate theses mentioned under courses IV–VI, the student may select a thesis from one of these courses, which must show a higher standard of work. To fill the six hours elective work Seniors must elect Laboratory Chemistry or Practical Physics.

I. Human Anatomy and Physiology.

PROFESSOR SCHANCK.

Professor Schanck gives a course consisting of a series of lectures, illustrated by manikin, models and diagrams, upon human Anatomy, and Physiology, occupying one hour a week during the second term of Freshman year.

II. Zoology and Botany.

PROFESSOR MACLOSKIE AND DR. RANKIN.

This course, two hours weekly in the second term of Sophomore year, consists of lectures upon General Zoology, illustrating the principles of classification, methods of investigation and fundamental laws of biological philosophy. This is followed by a series of recitations in Botany accompanied by practical work in the examination of plants. Text-books: Packard's *Elementary Zoology* and Macloskie's *Elementary Botany*.

III. General Biology.

PROFESSORS MACLOSKIE AND OSBORN.

This is an elective in the Junior year, occupying one lecture hour and two hours of laboratory practice a week. The text-book used for the course is Marshall and Hurst's *Practical Zoology*.

A. INVERTEBRATE MORPHOLOGY.—BOTANY.

The course in the first term is conducted by Prof. Macloskie and Dr. Rankin in the Biological Laboratory and includes lectures upon and the dissection of representative types of plants and invertebrate animals with especial attention to their embryology and life history.

B. VERTEBRATE MORPHOLOGY.

The course in the second term is conducted by Prof. Osborn and Mr. Phillips in the Morphological Laboratory, (Class of '77 Building), and includes lectures upon the Comparative Anatomy of the Vertebrates and a practical course of dissection upon the lower vertebrate types, such as the Lancelet and the Frog.

IV. Histology.

PROFESSOR LIBBEY.

This study is an elective, occupying one afternoon each week during the second term of Junior year, and it is also open to the Senior class at the same time. It consists of a series of lectures and demonstrations with laboratory work in microscopic anatomy. Only the normal tissues are discussed, and as wide a range of comparative study of the tissues in the animal kingdom is made as the time allotted permits.

Especial attention is devoted to the methods of injecting, hardening, preserving, staining and mounting specimens, and the students are carefully drilled in section cutting and in the use of the microscope, every facility being afforded the student to enable him to do good work.

The laboratory is open at all hours to its regular students for private investigations, and the Professor or the E. M. Fellow in Biology will be in attendance every afternoon to give assistance to those who may be present.

A good library and reading room are connected with the laboratory for the use of its students.

A fee of $10 is charged to cover mounting-material, slides, etc., as each student retains the set of specimens prepared as his own.

Text-books recommended:—Schaefer, Klein, Prudden.

V. Advanced Biology.

PROFESSORS MACLOSKIE AND OSBORN.

This is a Senior elective, occupying one lecture hour and two laboratory hours weekly.

A. INVERTEBRATE MORPHOLOGY, PLANT HISTOLOGY.

Professor Macloskie and Dr. Rankin conduct the course for the first term upon the Comparative Anatomy and Histology of one of the larger groups of invertebrate animals, and a single division of the plants, closing with the preparation of a thesis embodying original research.

B. Comparative Vertebrate Anatomy, Embryology.

Professor Osborn and Mr. Phillips conduct the latter half of the course upon Vertebrate Anatomy and Embryology. The lectures are upon the structure and evolution of the principal vertebrate organs and upon the principles of Biology, including a discussion of the Evolution Theory. The laboratory course is upon the development of the chick, following Foster and Balfour's *Elements of Embryology*, with instruction in the technique of embryological methods. The five closing weeks are given to the preparation of a thesis in Embryology. A fee of $4.50 is charged for the use of laboratory instruments, reagents and material, subject to a drawback.

During the winter months an optional course of lectures upon Vertebrate Embryology is given by Prof. Scott in Geological Hall.

VI. Palæontology.

Phylogeny and Comparative Anatomy of the Vertebrates.

Professors Scott and Osborn.

This is a Senior elective occupying one lecture and two laboratory hours weekly. The lectures by Prof. Scott cover the general subject of Vertebrate Palæontology and Comparative Osteology, treating especially the succession of reptilian and mammalian life of North America. The laboratory work of the first term is conducted by Prof. Osborn and Mr. Phillips in the Morphological Laboratory, as a parallel course of anatomical demonstrations and dissection of the fishes, birds, reptiles and mammals typical of the larger living groups, with practice in anatomical drawing. The second term, in the Palæontological Laboratory under Prof. Scott, is given to the examination of various fossil types accompanied by museum demonstrations and comparative osteological study. The course closes with an original thesis upon one of the fossil vertebrates. Text-books: Huxley's *Comparative Anatomy of the Vertebrates*, Wiedersheim's *Comparative Anatomy* (Parker).

EXHIBIT OF STUDIES.

NOTE.—The numbers indicate hours per week. Bible, Oratory, and Essays are required throughout the four years.

FRESHMAN YEAR.

ALL REQUIRED.

First Term.		*Second Term.*	
Latin	4	Latin	4
Greek	5	Greek	4
Mathematics	4	Mathematics	4
English	2	Mod. Lang.	2
		Anatomy	1
	15 hours.		15 hours.

SOPHOMORE YEAR.

REQUIRED.

Latin	2	Latin	2
Greek	2	Greek	2
Mathematics	2	Mathematics	2
Mod. Lang.	2	English	2
History	2	Logic	2
Chemistry	2	Zool. and Bot.	2
	12 hours.		12 hours.

ELECTIVE.

(Student to take two Electives—4 hours.)

Latin	2	Latin	2
Greek	2	Greek	2
Mathematics	4*	Mathematics	4*
French	2	French	2
German	2	German	2
	16 hours.		16 hours.

* Excuses from the 2 hours Required Mathematics.

JUNIOR YEAR.

REQUIRED.

First Term.		*Second Term.*	
PHYSICS	2	PHYSICS	2
PSYCHOLOGY	2	POLITICAL ECONOMY	2
ENGLISH	2	ENGLISH	2
ASTRONOMY	2	GEOLOGY	2
	8 hours.		8 hours.
(Student takes 6 hours Elective work.)			6 hours.
	14 hours.		14 hours

JUNIOR ELECTIVES.

Electives in *Italics* are open to both Juniors and Seniors. Bracketed subjects indicate different courses in alternate years.

Electives in Roman open to Juniors only;—same subject each year.

I. MENTAL PHILOSOPHY.

First Term.		*Second Term.*	
[*History of Philosophy*	2]	[*History of Philosophy*	2]
[*Advanced Logic*	2]	[*Plato* (*Greek O.*)	2]

II. POLITICAL SCIENCE AND HISTORY.

[*Ancient History* (91–92)	2]	[*Med. & Mod. Hist.* (91-92)	2]
[*Comp. Politics*	2]	[*Hist. Pol. Theories*	2]
[*Public Law*	2]	[*Jurisprudence*	2]

III. CLASSICS.

[*Latin* (*P.*)	2]	[*Latin* (*West*)	2]
[*Greek* (*W.*)	2]	[*Greek* (*O.*)	2]

IV. MODERN LANGUAGES.

[*French*	2]	[*French*	2]
German	2	German	2
Italian	2	*Italian*	2

V. MATHEMATICS AND MATHEMATICAL SCIENCES.

Mathematics (*D.*)	2	Mathematics (*D.*)	2
[*Mathematics* (*F.*)	2]	[*Mathematics* (*F.*)	2]
Physics	4*	Physics	4*

* Excuses from the two hours Required Physics.

VI. Natural Sciences.

General Biology	2	General Biology	2
Chemistry	2	*Histology*	2
Anglo-Saxon	2	*Early English*	2
Hebrew	2	*Hebrew*	2
Art and Archæology (*M.*)	2	*Art and Archæology* (*F.*)	2

JUNIOR ELECTIVE EXCLUSIONS.

	First Term.	*Second Term.*
A.	*Mathematics* (*F.*) *Anglo-Saxon* *Hebrew*	*Mathematics* (*F.*) *Early English* *Hebrew*
B.	General Biology *Art and Archæology* (*M.*) *Advanced Logic*	General Biology *Art and Archæology* (*F.*)
C.	Chemistry* *Public Law*	*Histology* *Jurisprudence*
K.	Physics *Italian*	Physics *Italian*

SENIOR YEAR.

REQUIRED.

First Term.		*Second Term.*	
Astronomy	2	Geology	2
Ethics	2	Ev. of Christianity	1
	4 hours.		3 hours.
(Student takes	10 hours Elective work.)		10 hours.
	14 hours.		13 hours.

* Exclusive also with German.

SENIOR ELECTIVES.

In addition to those *common* to Junior and Senior years, (see Junior Electives,) there are the following Senior Electives:

First Term.		*Second Term.*	
Mental Philosophy:			
Metaphysics	2	Contemporary Philosophy	2
Physiological Psychology	2	Science and Religion	2
Aristotle (*O.*)	2	Pedagogics	2
Political Science:			
Science of Government	2	Administration	2
Hist. of Pol. Economy	2		
Roman Law (*Westcott*)	2	Roman Law (*Westcott*)	2
Art and Archæology:			
Art and Archæology (*M.*)	2	Art and Archæology (*M.*)	2
Art and Archæology (*F.*)	2	Art and Archæology (*F.*)	2
Ancient Languages:			
Advanced Hebrew	2	Advanced Hebrew	3
Sanskrit	2	Sanskrit	2
Greek (*O.*) (Aristotle)	2	Greek (*W.*)	2
Greek (*C.*)	2	Greek (*C.*)	2
Latin (*West*)	2	Latin (*P.*)	2
Roman Law (*Westcott*)	2	Roman Law (*Westcott*)	2
English:			
English	2	English	2
Modern Languages:			
German	2	German	2
Mathematics and Mathematical Sciences:			
Mathematics	2	Mathematics	2
Practical Astronomy	2	Practical Astronomy	2
Theoretical Physics	2	Theoretical Physics	2
Practical Physics	2	Practical Physics	2
Laboratory Chemistry	2		
Natural Sciences:			
Laboratory Chemistry	2	Phys. Geography	2
Advanced Biology	2	Advanced Biology	2
Palæontology	2	Palæontology	2

SENIOR ELECTIVE EXCLUSIONS

arranged in groups, wherein only one study of any one group may be elected.

(NOTE.—*Italics* indicate Electives common to Juniors and Seniors;—Roman for Senior Electives.)

	I. TERM.	II. TERM.
A.	*Mathematics* (*F.*) *Anglo-Saxon* *Hebrew* Metaphysics Art and Archæol. (*M.*) Advanced Biology	*Mathematics* (*F.*) *Early English* *Hebrew* Philosophy since Kant Art and Archæology (*M.*) Advanced Biology.
B.	*History of Art* *Advanced Logic* Hist of Pol. Econ. Latin (*West*) Math. (*F.* Wednesday)	*Archæology* Latin (*P.*) Math. (*F.* Wednesday)
C.	*Public Law* Greek (*O.*) Aristotle Theoretical Physics	*Jurisprudence* Greek (*W.*) Theoretical Physics
D.	Art and Archæol. (*F.*) Math. (*F.* Tuesday) Phys. Psychology	Art and Archæology (*F.*) Math. (*F.* Tuesday)
E.	English Practical Physics	English Practical Physics
F.	Sanskrit Science of Govt. Lab. Chemistry	Sanskrit Administration. Science and Religion (Friday)
G.	Pract. Astronomy Palæontology Roman Law Adv. Hebrew	Pract. Astronomy Palæontology Roman Law Adv. Hebrew

H. { } { Science and Religion (Friday)
Physical Geography
Pedagogics
Greek (*C*) (Tuesday)

HONORS.

I. *General Honors.*

To be granted for general excellence.

II. *Special Honors*

To be granted in leading general departments.

Special Honors in any Department shall be awarded only to students whose general average is above mediocrity. No student will be eligible as a candidate for Special Honors in any Department in the Senior year, who has not passed an examination in the Honor course of the preceding years in the Department in which he seeks Special Honors.

(1) *In Freshman Year*—(in 4 hour subjects)—in *Latin, Greek, Mathematics.*

(2) *In Sophomore Year*—(in 4 hour subjects.)

Latin	4	
Greek	4	
Math.	4	
French	4	(The Elective with Required M. L. and English.)
German	4	" " " " " " "

(3) *In Junior Year*—

The student must take 4 hours Elective work in the Department in which he seeks Honors.

Mental Philosophy,
Pol. Science and History,
Classics,
Modern Languages,
English,
Mathematics and Math. Sciences,
Natural Sciences.

NOTE.—To be eligible for Junior Honors in English, students must maintain First Group Standing in Required English, and complete the *four* hours Elective work from Electives in Classics or Modern Languages.

Candidates for Honors in Mathematics and Math. Sciences must take Elective Physics.

(4) *In Senior Year—*

The student must take 6 hours Elective work in the Department in which he seeks Honors, or, taking only 4 hours Elective work in that Department, must maintain First Group standing in the Required Study belonging to that Department.

Mental Science,	English,*
Pol. Science and History,	Modern Languages,*
Art and Archæology,*	Mathematics and Math. Sciences,
Ancient Languages,	Natural Sciences.†

Candidates for Honors in Mathematics and Math. Sciences must take Elective Physics.

NOTE.—To make up the *six* hours Elective work in the departments, marked with an asterisk (*), they must be combined with some cognate Electives; Archæology and Art with Latin, Greek and History; Modern Languages with either English or Latin or Greek; English with Modern Languages or Latin or Greek.

In Natural Sciences† one of the courses taken must be Laboratory Chemistry or Practical Physics.

FRESHMAN FIRST TERM SCHEDULE.—1890–91.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8		Math. I. A 4 Math. III. B 5 Math. V.(B) 3	Latin I. B 13 Greek III. B 2 Greek V.(B) 3	Greek II. A 7 Greek IV. B 2 Greek V.(B) 5	Greek II. A 7 Greek IV. B 2 Greek V. (B) 5	Bible.
9		Math. II. A 4 Math. IV. B 5 Math. VI.(B) 3	Latin II. B 13 Greek IV.(B) 3	Greek I. A 7 Greek III. B 2	Greek I. A 7 Greek III. B 2	
10	Math. I. A 4 Math. III. B 5 Math. V.(B) 3	Latin III. B 13 Latin V.(B) 2	Eng. III. V *a* 1	Latin II. B 13 Latin IV.(A) 2	Latin II. A 14 Latin IV. (B) 2	Latin I. B 13 Eng. III. V *a* 1
11	Math. II. A 4 Math. IV. B 5 Math. VI.(B) 3	Eng. I. II. 7 Latin IV. (B) 2	Eng. I. II. 7 Eng. IV. V *b* 1	Latin I. B 13 Latin III.(A) 5 Latin V. A 5	Latin I A 14 Latin III. B 13 Latin V. (B) 2	Latin II. B 13 Eng. IV. V *b* 1
3	Math. I. B 5 Math. III.(A) 3 Math. V. A 4	Math. I. B 5 Math. III.(A) 3 Math. V. A 4		Greek II. B 2 Greek IV.(A) 5	Greek II. B 2 Greek IV.(A) 5	
4	Math. II. B 5 Math. IV.(A) 3 Math. VI. A 4 Elocution.	Math. II. B 5 Math. IV.(A) 3 Math. VI. A 4 Elocution.	Greek I. B 2 Latin III. B 13 Latin V. (B) 14	Greek I. B 2 Greek III.(A) 4 Greek V. A 7 Elocution.	Greek I. B 2 Greek III. (A) 4 Greek V. A 7 Elocution.	
5			Greek II. B 2 Latin IV. (B) 14			

Math. A=Algebra. Latin A=Prose Comp. Greek A=Homer
Math. B=Geometry. Latin B=Cicero and History. Greek B=Comp. and Xenophon.

Roman numerals indicate Divisions. Arabic numerals indicate rooms.

FRESHMAN SECOND TERM SCHEDULE.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½		Math. I A 4 Math. III B 5 Math. V (B) 3	Latin I B 13 Latin III A 14 Latin V (A) 12	Greek I A 7 Greek III B 2 Greek IV (B) 3	Anatomy French III	
9½		Math. II A 4 Math. IV B 5 Math. VI (B) 3	Latin II B 13 Latin IV (A) 12	Greek II A 7 Greek V (B) 3	Latin II A 14 Latin IV (B) 3	French I 3 German I 9
10½	Math. I A 4 Math. III B 5 Math. V (B) 3	Greek I B 2 Greek IV (A) 3	French I 8 German I 9	Latin II B 13 Latin IV (A) 5	Latin I A 14 Latin III (B) 3 Latin V B 13	French II 3 German II 9
11½	Math. II A 4 Math. IV B 5 Math. VI (B) 3	Greek II B 2 Greek III A 7 Greek V (A) 3	French II 3 German II 9	Latin I B 13 Latin III A 14 Latin V (A) 5	Anatomy German III	French III 3 German III 9
3	Math. I B 5 Math. III (A) 3 Math. V A 4	Math. I B 5 Math. III (A) 3 Math. V A 4	Latin I A 14 Latin III (B) 2	Greek I B 2 Greek IV (A) 3	Greek I A 7 Greek IV (B) 2	
4	Math. II B 5 Math. IV (A) 3 Math. VI A 4	Math. II B 5 Math. IV (A) 3 Math. VI A 4	Latin II A 14 Latin IV (B) 2 Latin V B 13	Greek II B 2 Greek III A 7 Greek V (A) 3	Greek II A 7 Greek III B 2 Greek V (B) 3	
5						

Math. A=Algebra. Latin A=Horace. Greek A=Homer.
Math. B=Geometry. Latin B=Livy. Greek B=Herodotus.
Roman numerals indicate Divisions. Arabic numerals indicate rooms.

SOPHOMORE FIRST TERM SCHEDULE.

12 hours Required + 2 two-hour ELECTIVES = 16 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8		Latin 1 Greek 3	Math. 1 & 2	History 1 & 2 French 4	LATIN	Bible Bible
9	GERMAN	Latin 2 Greek 4	Math. 3 & 4	History 3 & 4 French 2	MATH.	Chem. 3 & 4
10	Latin 1 Greek 3	MATH.	History 1 & 2	GREEK	GREEK	French 1
11	Latin 2 Greek 4	GERMAN	History 3 & 4	MATH.	Chem. 1 & 2 French 4	Chem. 1 & 2 French 3
3	Latin 3 Greek 1	Latin 3 Greek 1	FRENCH	French 3	FRENCH	
4	Latin 4 Greek 2	Latin 4 Greek 2	Math. 1 & 2	French 1	Chem. 3 & 4 French 2	
5		MATH.	Math. 3 & 4	LATIN		

Divisions in Classics and Math. independent. Other divisions must be same as in French (the Required Mod. Lang.)

SOPHOMORE SECOND TERM SCHEDULE.

12 hours Required + 2 two-hour ELECTIVES = 16 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½		Latin 1 Greek 3	English 3 & 4	English 1 & 2	LATIN	
9½	GERMAN	Latin 2 Greek 4	Math. 1 & 2	English 3 & 4	MATH.	Zool. & Bot. 3 & 4
10½	Latin 1 Greek 3	MATH.	Math. 3 & 4	GREEK	GREEK	
11½	Latin 2 Greek 4	GERMAN	English 1 & 2	MATH.	Logic 1 & 2 Zool. & Bot. 3 & 4	Zool. & Bot. 1 & 2
3	Latin 3 Greek 1	Latin 3 Greek 1	FRENCH	Logic 1 & 2	FRENCH	
4	Latin 4 Greek 2	Latin 4 Greek 2	Math. 1 & 2	Logic 3 & 4	Logic 3 & 4 Zool. & Bot. 1 & 2	
5		MATH.	Math. 3 & 4	LATIN		

Divisions independent in Required Classics (Latin & Greek same), Mathematics, English and Bible.
Divisions in Logic and Zool. & Bot. to be the same.

JUNIOR FIRST TERM SCHEDULE.

8 hours REQUIRED + 3 two-hour Electives = 14 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8		PHYSICS	*Hist. Phil.*	*Latin* (*P.*)	*Latin* (*P.*)	BIBLE
9	PHYSICS		*Math.* (*F.*) *Anglo-Saxon* *Hebrew*	*Math.* (*F.*) *Anglo-Saxon* *Hebrew*	*French*	*French*
10	ASTRONOMY	ASTRONOMY	*Public Law*	Chemistry *Public Law*	Math. (*D.*)	PSYCHOL.
11	Physics	Physics	*Greek* (*W.*)	*Greek* (*W.*)	*Hist. Phil.*	
3			Gen. Biology *Art & A.* (*M.*) *Adv. Logic*	German Chemistry	Math. (*D.*)	
4	ENGLISH	ENGLISH	German	Gen. Biology *Art & A.* (*M.*) *Adv. Logic*	PSYCHOL.	
5	Physics *Italian*	Physics *Italian*	*History*	*History*		

Electives in *Italics* open to Juniors and Seniors.
Electives in Roman open to Juniors only.
Bracketed Electives mutually exclusive.

JUNIOR SECOND TERM SCHEDULE.

8 hours REQUIRED + 3 two-hour Electives = 14 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½		PHYSICS	*French*	*Latin* (*W.*)	*Latin* (*W.*)	
9½	PHYSICS		*Math.* (*F.*) *Early English* *Hebrew*	*Math.* (*F.*) *Early English* *Hebrew*	*Hist. Phil.*	*Hist. Phil.*
10½	GEOLOGY	GEOLOGY	*Histology* *Jurisprudence*	*Histology* *Jurisprudence*	Math. (*D.*)	POL. ECON.
11½	Physics	Physics	*Greek* (*O.*)	*Greek* (*O.*)	*French*	
3			Gen. Biology *Art & A.* (*F.*)	German	Math. (*D.*)	
4	ENGLISH	ENGLISH	German	Gen. Biology Art & A. (*F.*)	POL. ECON.	
5	Physics *Italian*	Physics *Italian*	*History*	*History*		

Electives in *Italics* open to Juniors and Seniors.
Electives in Roman open to Juniors only.
Bracketed Electives mutually exclusive.

SENIOR FIRST TERM SCHEDULE.

4 hours REQUIRED + 5 two-hour Electives = 14 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8		F	*Hist. Phil.*	*Latin* (*P.*)	*Latin* (*P.*)	BIBLE
9	Greek (*C.*)	G	A	A	*French*	*French*
10		Greek (*C.*)	C	C	F	ETHICS
11	D	D	*Greek* (*W.*)	*Greek* (*W.*)	*Hist. Phil.*	
3	ASTRON. I	ASTRON. I	B	E	G	
4	German* ASTRON. II	German* ASTRON. II	E	B	ETHICS	
5	*Italian.*	*Italian.*	*History*	*History*		

*Recites in Astronomy I.
Electives in *Italics*—open to Juniors and Seniors.
Electives in Roman type—open to Seniors only.
Large Capitals (A, B, C, D, E, F, G, H, J,) indicate groups of mutually exclusive Electives.

SENIOR SECOND TERM SCHEDULE.

3 hours REQUIRED + 5 two-hour Electives = 13 hours.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½		F	*French*	*Latin* (*W.*)	*Latin* (*W.*)	
9½	Greek (*C.*)	G	A	A	*Hist. Phil.*	*Hist. Phil.*
10½		H Greek (*C.*)	C	C	F	EV. OF CHRIST.
11½	D	D	*Greek* (*O.*)	*Greek* (*O.*)	*French*	
3	GEOLOGY I	GEOLOGY I	B	E	G	
4	German* GEOLOGY II	German* GEOLOGY II	E	B	H	
5	*Italian*	*Italian*	*History*	*History*		

*Recites in Geology I.

EXAMINATIONS, STANDING AND GRADUATION.

EXAMINATIONS.

Regular Examinations.—At the end of each term each class is ordinarily examined in the studies of that term. At the close of the second term the examination in certain subjects embraces not only the work of that term, but the course of the entire year.

Partial Examinations and Written Recitations.—In addition to the regular examinations, partial examinations or written recitations are held from time to time during the term.

Divisional Examinations.—In the Freshman class, a special examination is held early in the first term, the results of which determine the distribution of the class into graded divisions. These are reorganized at the beginning of the second term according to the results of the last preceding regular examination.

General Regulations.—Examinations are for the most part conducted in writing, but in certain subjects are oral in whole or in part. Private examinations are not allowed except in extreme cases and by special permission of the Faculty. Absence from an examination, except for reasons of absolute necessity, will be regarded as a serious delinquency, and a subsequent examination will not be granted except by a vote of the Faculty.

Regulations concerning the Removal of Conditions.

Students who shall appear to the Faculty, on examination, to be deficient in their studies, will be dealt with according to the nature and extent of the deficiency. Any member of any of the three lower classes who shall fail to pass the examinations at the end of the first term in three courses involving as much as six hours

weekly schedule time, shall be dropped from his class and shall be required to enter a lower class or to withdraw from College. If the failure be in less than three courses, the student may be allowed a second trial; if he fail in this second examination, he shall employ a tutor approved by the Faculty, and be allowed four weeks for further preparation; but if he still fail to pass, he shall be required to enter a lower class or withdraw from College. The same rules shall apply to the examinations at the close of the second term, except that in the case of failure in less than three courses the student shall be required to pass a satisfactory examination at the beginning of the next Academic year, and will not be allowed additional time for preparation, nor a third trial.

The Senior class will be subject to the same regulations as the three lower classes so far as regards the examinations at the close of the *first* term, and the removal of any conditions then incurred.

In the application of these regulations, special cases, arising from illness or other causes, will be duly considered.

All students who are delinquent or unexamined at the first term examinations must report to their instructors, immediately upon notification from the Registrar, and make arrangement for examination in the subjects in which they are deficient. This examination must be held within three weeks after the opening of the second term.

All students who are delinquent or unexamined at the second term examinations must report to their instructors for immediate examination not later than the second day of the next college year.

Any student not reporting as thus directed, or not prepared for examination at the time appointed, will be debarred from another opportunity, except by special vote of the Faculty.

STANDING.

The results of the term examinations are combined with those of the recitations to decide the relative standing or rank of the student. The maximum mark in each study is one hundred; the minimum or passing mark is fifty. Students falling below the passing mark in any study, are conditioned, and in order to continue with the class must be re-examined.

Each instructor, after computing from recitations and examinations the marks of his classes determines each student's rank by assigning him to one of certain groups into which the class is divided. These groups are constituted and numbered in order of merit—those students whose marks indicate the highest attainments being assigned to the first group, the next highest to the second group, and so on through the groups.

The general rank of a student is determined by combining his group numbers in the several studies in proportion to the allotted schedule time of each. Those students whose averages are highest, and above an established limit, are assigned to the first general group, those next highest to the second general group; and so on through the general groups.

In determining a student's standing, essays count as one hour per week throughout each of the four years. Account is taken of attendance and conduct as well as scholarship, according to the published rules of the Faculty.

A report of the standing of each student is made to his parent or guardian by the Registrar of the College at the close of the first term and at the close of the year. The latter report gives also the standing for the whole year.

GRADUATION.

Bachelor's Degree.

Students who pass their final examination are ordinarily recommended by the Faculty for the degree of Bachelor of Arts, and if the recommendation is approved by the Trustees, the degree is conferred at Commencement, and they receive diplomas signed by the President and the Clerk of the Board of Trustees.

No student will be recommended to the Trustees for a degree who fails to pass the examinations at the close of the last term of the Senior year.

Any member of the Senior class failing to pass the regular final examination in but *one* course may, by vote of the Faculty, be allowed a re-examination, and if successful in passing this, may be recommended to receive his degree with his class.

Any member of the Senior class failing to pass the regular final examination in *two* courses may, by vote of the Faculty, be allowed a re-examination, and if successful in this, may be recommended for a degree *at some time in the next Academic year.*

Final Rank and Graduation Honors.

The final rank of members of the graduating class is computed by combining the averages for the several years of the course, except that the average for the Freshman year is omitted in those cases in which it would lower the standing of the student. The Faculty then determines what portion of the class shall be printed as the Honor List—the name of the members of each group being printed in alphabetical order with particular departments indicated in which they have excelled, or taken Special Honors.

The first and second general groups thus determined are the Honor groups of the graduating class, and are designated *magna cum laude* and *cum laude* respectively.

The higher distinction of *insigni cum laude* and the highest, of *summa cum laude* are reserved for very unusual excellence.

Commencement Speakers.

The student whose individual rank is highest is ordinarily awarded the Latin Salutatory by vote of the Faculty. In like manner the student whose individual rank is the next highest receives the English Salutatory. The Valedictory is awarded with special regard to the qualifications of the student as a valedictorian, as well as on the ground of scholarship. Five others out of sixteen recommended by the Baird Prize Committee deliver English Orations, usually in the order of their scholarship.

In the award of all degrees and honors, regard is had to the conduct of the student during his course, and any student who has incurred serious discipline may be debarred from the rank to which otherwise his scholarship would have entitled him.

THE

JOHN C. GREEN SCHOOL OF SCIENCE.

PROFESSORS AND INSTRUCTORS.

FRANCIS L. PATTON, PRESIDENT.
JAMES O. MURRAY, DEAN, *English Literature and Language.*
J. STILLWELL SCHANCK, *General Chemistry.*
CYRUS F. BRACKETT, *Physics and Electrical Engineering.*
HENRY B. CORNWALL, *Analytical Chemistry and Mineralogy.*
GEORGE MACLOSKIE, *Botany, Zoology, Biblical Instruction.*
CHARLES McMILLAN, *Civil Engineering.*
CHARLES A. YOUNG, *Astronomy.*
CHARLES G. ROCKWOOD, JR., *Mathematics.*
THEODORE W. HUNT, *Rhetoric, English Language.*
WILLIAM M. SLOANE, *Comparative Politics.*
GEORGE L. RAYMOND, *Oratory and Æsthetic Criticism.*
WILLIAM LIBBEY, JR., *Histology.*
WILLIAM B. SCOTT, *Geology.*
HENRY F. OSBORN, *Comparative Anatomy.*
FREDERICK N. WILLSON, *Descriptive Geometry, Stereotomy, Technical Drawing.*
ALLAN MARQUAND, *History of Art.*
ANDREW F. WEST, *Pedagogics.*
ALEXANDER T. ORMOND, *Psychology.*
HERMANN C. O. HUSS, *French, German.*
WOODROW WILSON, *Political Science.*
WILLIAM F. MAGIE, *Physics.*
H. S. S. SMITH, *Civil Engineering.*
LEROY W. McCAY, *Analytical Chemistry.*

MARION M. MILLER, *English and Oratory.*
TAYLOR REED, *Practical Astronomy.*
WALTER M. RANKIN, *Biology.*
WALTER B. HARRIS, *Civil Engineering.*
SAMUEL THOMSON DODD, *Physics.*
A. H. PHILLIPS, *Biology.*
RUDOLPH WEBER, *Drawing.*
HOWARD CROSBY WARREN, *Logic.*
JOHN MILTON BROOKS, *Mathematics.*
LOUIS EUGENE LIVINGOOD, *French, German.*

FOUNDATION AND ORGANIZATION OF THE JOHN C. GREEN SCHOOL OF SCIENCE.

This institution is a department of the College of New Jersey, founded in 1873 upon an endowment of Mr. John C. Green.

Its design is to furnish more extended and special instruction in the natural sciences, providing several scientific courses leading to the degree of Bachelor of Science and also various graduate courses. The course in Civil Engineering was added in 1875, by further endowment from the residuary legatees of Mr. Green.

The course in Electrical Engineering was added in 1889, by the same donors.

The undergraduate courses offer, according to the choice of the student, efficient education in the natural sciences in general, or a thorough training in the study of civil engineering or of electrical engineering, and in various other branches of science, pure and applied. At the same time a liberal education in certain academic studies is secured to all candidates for a degree.

Graduate courses of study for the degrees of Master of Science and Doctor of Science are provided, and also special courses which, under certain conditions, may be taken by students who are not candidates for any degree.

Instruction is given by lectures and recitations—by practice in the laboratories, drawing-rooms, museums and field—and excursions are made to different points of interest.

Before receiving his degree every student must present to the Faculty an acceptable thesis on some scientific subject, the nature of which will depend upon the course he has pursued.

ADMISSION.

ENTRANCE EXAMINATIONS.

All entering students on their arrival must report at the Faculty room in the College offices, and be registered. The first examination for admission will begin in Princeton, on Thursday, June 11th, 1891, at 11 A. M., and will continue through the afternoon of Friday. The second will begin on Tuesday, September 22d, at 11 A. M., and continue through the afternoon of Wednesday. Applicants who have conditions or other deficiencies from the June examination are expected to remove them at this time. *Attendance is required at the beginning of the examinations.*

Simultaneously with the June entrance examinations in Princeton, examinations are held in the cities of New York, Philadelphia, Pittsburg, Cincinnati, Louisville, Chicago, St. Louis, Omaha, Denver, and San Francisco; and at preparatory schools and other cities when necessary. The precise places in which the examinations are to be held can be learned by application to the Registrar. Due notice of these examinations will also be published in leading local newspapers for several weeks in advance.

Examinations at other times and places than those specified are very inconvenient and often impracticable, and applicants for examination at other than the regular days are required to pay $10 into the treasury.

At the examinations in June, candidates intending to enter the Freshman class one year later are admitted, on request, to examination on a portion of the subjects required for entrance. Applications for such preliminary examination should be made to the Registrar, with a statement of the subjects and amount offered, at least two weeks previous to the examination.

Candidates for admission to the Freshman class must be at least sixteen years of age. They will be examined in the following books and subjects:

ENGLISH: Grammar—Whitney, or equivalent; U. S. History —Johnston, or equivalent; Essay—the theme for 1891 will be based on the life of Rufus Choate or Agassiz. The attention of preparatory schools is called to the need of a more thorough study of elementary English. MATHEMATICS: Arithmetic entire, including the Metric system, a practical knowledge of which is indispensable; Algebra, through quadratic equations involving two unknown quantities, including evolution, radicals, theory of exponents; Geometry—plane geometry entire (five books of Wentworth's Geometry or equivalent). PHYSICAL GEOGRAPHY: The elements, as contained in Guyot's Grammar-School Geography.

MODERN LANGUAGES: either FRENCH or GERMAN at the option of the candidate. In either language the examination will be upon the general principles of grammar [French: Otto, pp. 28–201; or Whitney, pp. 27–202; or Edgren, pp. VIII-LXIII and 24–109; German: Whitney, pp. 23–153 and 278–284; or Brandt, pp. 6–154; or Otto, Part I; or Joynes-Meissner, pp. 19–177; or Huss, pp. 9–101 of the Theoretical Part, the sections with heavy-faced references only], and the ability to translate easy prose, such as, in French, the first fifty pages of *Lamartine's* Graziella, or of *G. Sand's* La Mare au Diable, or *Erckmann-Chatrian's* Le Conscrit, or *Lacombe's* Petite Histoire du Peuple Français; or in German, *Grimm's* Märchen (Otis's edition, pp. 61–109), or *Boisen's* German Prose (pp. 3–51), or *Joynes's* German Reader, Parts I and II.

Candidates for the degree of Bachelor of Science will be examined (in addition to the subjects above enumerated) in LATIN: Grammar, with special attention to parsing, and the retranslation from English into Latin of simple sentences from the First Book of Cæsar; Translation, Cæsar (five books of the Gallic War), Cicero (the four orations against Catiline), or equivalents from other Latin authors.

It is recommended that all candidates should receive instruction in free-hand drawing before their entrance.

OTHER REQUIREMENTS.

Candidates for admission to an advanced class will be examined in the studies previously pursued by the class they propose to enter,

and may also be required to pass the regular examinations for admission to the Freshman class.

All candidates for admission must bring satisfactory testimonials of good moral character and attainments, preferably from their last instructors, and if the candidate has been a member of another college, university, or similar institution, he must produce a certificate from its President or Faculty that he is free from censure in the same.

No candidate is admitted without an examination and a vote of the Faculty.

Immediately after the opening of the College the entering students meet according to announcement for the registration of their names and subscription to the following pledge, required by the Board of Trustees:

We, the undersigned, do individually for ourselves promise, without any mental reservation, that we will have no connection whatever with any secret society, nor be present at the meetings of any secret society in this or any other college so long as we are members of the College of New Jersey; it being understood that this promise has no reference to the American Whig and Cliosophic Societies. We also declare that we regard ourselves bound to keep this promise and on no account whatever to violate it.

UNDERGRADUATE COURSES.

Undergraduate courses are provided for the degrees of Bachelor of Science, of Civil Engineer and of Electrical Engineer.

All candidates for the degree of Bachelor of Science pursue the same studies until the end of the Sophomore year, after which they pursue one of the following three Elective Courses: General Science; Chemistry; Biology and Chemistry.

The student must announce his election at the end of the Sophomore year. He cannot afterward change his course without the permission of the Faculty.

Candidates for the degree of Civil Engineer pursue some studies in common with candidates for the degree of Bachelor of Science, but the divergence of the two courses commences at the very beginning.

At the beginning of Senior year, students who have hitherto pursued the course in Civil Engineering, and those who, in the course in General Science, have taken the same amount of Mathematics, including Descriptive Geometry, as in the course in Civil Engineering, may become candidates for the degree of Electrical Engineer.

Special Students.—For persons who may desire to devote special attention to any of the scientific studies of the School, arrangements may be made with the Professors of those branches, if the Professor in charge shall, after due investigation, decide that the applicants can pursue such studies with advantage. Every facility will be offered for their advancement in the studies selected, with the personal supervision of the Professor and full access to the collections, etc.; but it must be distinctly understood that this opportunity is intended only for those who desire to obtain proficiency in special branches, and not for students who have failed to keep up with the regular classes. Special students will be required to give evidence of satisfactory progress in their studies. To those passing successful

examinations in the branches selected, certificates of proficiency will be given. The branches open to special students include geology, mineralogy, biology, physics, practical astronomy, analytical and applied chemistry, assaying, topography.

Optional Courses.—The optional courses which are offered to the students of the Academic department (p. 28) are also open to those students of the School of Science who may be fitted to pursue them with profit.

COURSES FOR THE DEGREE OF BACHELOR OF SCIENCE.

STUDIES IN COMMON.

Modern Languages.

PROFESSOR HUSS AND MR. LIVINGOOD.

Instruction in Modern Languages comprises German and French as required studies throughout the entire course, the number of exercises being given in the Exhibit of Studies on a later page.

In the Freshman year the etymological part of grammar is taught. The instruction is, at the very outset, conducted with a view to familiarizing the student not only with reading and writing, but also with speaking the foreign idiom; for which latter purpose conversational exercises are constantly resorted to and especial attention is given to pronunciation.

In the Sophomore year the instruction bears on syntax, with oral and written exercises in French and German prose, particular attention being given to the intricacies of the German period.

The Junior and Senior years are devoted to a critical study of the masterpieces of German and French literature, with lectures thereon.

Mathematics.

PROFESSOR ROCKWOOD AND MR. BROOKS.

The Mathematical course, which is the same for all students of the School of Science, is intended to be so framed as to supply the

necessary foundation in knowledge and training for the later studies of physics and mechanics, and especially finds its natural continuation in the applied mathematics of the course in Civil Engineering. The fact that the student's mathematical knowledge is thus to be used in other departments is carefully kept in view, not only in selecting the subjects to be studied, but in arranging their order and the relative time to be devoted to each, so that he may be properly prepared for the work before him. Constant black-board practice is a prominent feature of the instruction, and gives the student a practical as well as a theoretical familiarity with the processes, preparing him for their ready use afterwards in the special investigations of his later studies.

The student is required, at the entrance examination, to be acquainted with arithmetic, including the Metric system; algebra through quadratic equations, including radicals and the theory of exponents; and with the principles of plane geometry as developed in the first five books of Wentworth's Geometry or equivalent.

During the whole of the first year the student devotes five hours a week to mathematics. In the first term he finishes the study of algebra (Wells), discussing the various forms of series, the subject of logarithms and the theory of equations.

At the same time, and extending into the second term, solid geometry and spherical geometry are studied, the text-book being Wentworth's new treatise, and the subject being illustrated by a numerous and valuable collection of models, mostly from original designs. With the geometry is combined a thorough course in mensuration with the use of logarithms. The remainder of the second term is devoted to plane and spherical trigonometry. The first term of the Sophomore year, with five exercises a week, is devoted to the study of analytical geometry (Bowser), both of the plane and of space, with special reference to the conic sections, and the differential calculus is begun. In the second term of the Sophomore year the differential and integral calculus (Bowser) are studied, with three or five exercises a week, the longer course being intended for students in the courses in Engineering. Throughout the whole course, the blackboard drill is combined with abundant oral explanation and occasional formal lectures.

The calculus ends the course in the pure mathematics required of all students. They pass then to the applications of their work in the special departments of engineering, physics, astronomy, etc.

The Algebra of the first term and all the Mathematics of the second term of the Freshman year are conducted by Mr. Brooks. The Solid Geometry of the first term Freshman year with the Analytical Geometry and Calculus of Sophomore year are conducted by Professor Rockwood.

Graphics.

PROFESSOR F. N. WILLSON AND MR. WEBER.

RECENT CHANGES IN THE COURSES IN GRAPHICS.—To enable those members of the B. S. division who so desire, to specialize in chemical and biological work to a greater degree than was possible by former schedules, and also to give them a more extensive course in the kind of drawing likely to be most serviceable in their professional work, the following radical changes have been made in their courses in Graphics:—(a) the time allotted to free-hand drawing has been increased to forty two-hour exercises; (b) with the exception of the mechanical drawing of Freshman year, taken in common with the C. E. and E. E. students, no other courses in Graphics are *required*, descriptive geometry, shadows and perspective having been made *electives* in the Junior year, and stereotomy and mechanism (with machine drawing) *electives* in Senior year to B. S. students who take the *General Science* course.

FREE-HAND DRAWING.—This course, given by Mr. Weber, occupies, as above stated, forty exercises, divided between the first and second years of the course. The models are either from the collections in the Museum of Natural History or specimens of the same nature obtained by the student during his rambles. The aim of the course is to thoroughly familiarize the student with the usual methods of free-hand representation employed in scientific investigation and illustration. An especial feature of the course will be the preparation of drawings for reproduction by lithography, wood-engraving, gelatinography and other processes, to illustrate Botany, Embryology, Histology and kindred sciences. Arrangements have been made to make this course of practical value to

scientists in this and other colleges, in the illustration of the memoirs and pamphlets embodying the results of their original researches; the same step also affords to students showing especial aptitude for this line of work an opportunity of obtaining remunerative employment.

MECHANICAL DRAWING.—During the first term of Freshman year a course of sixty exercises in practical geometrical and engineering drawing is given, beginning with instruction in the use of drafting instruments and materials, and including tinting and shading, both with pen and brush, lettering and the representation of metals, wood, masonry, earth, tiles and the other materials of architectural and engineering construction. Architectural drawings and tracings are then made, to scale, from measurements, also "working drawings" of details of machinery, bridges, etc., from free-hand sketches taken by the students. The course further includes the solution of the more important plane problems involving only the straight line and the circle; the tracing of point paths in link motions; the graphic construction of the conic sections and of various trochoidal and other higher plane curves, in connection with which their most interesting geometrical properties are examined; the solution of problems in orthographic projection (first angle); axonometric (including isometric) projection, with applications in crystallography, in drawing from architectural and other models, and also from data derived from working drawings.

The Civil and Electrical Engineering students take the course just outlined and also additional work in Graphics in the Freshman, Sophomore, Junior and Senior years, regarding which see the outlines of Engineering courses.

The recitation and drafting room of the department of Graphics is well lighted and furnished with model cases and with desks for classes of fifty. The drawing courses in descriptive geometry, shades and shadows, architectural constructions (including stone-cutting), kinematics and machinery, are illustrated by large collections of models, among them those described on a later page.

General Chemistry.

PROFESSOR SCHANCK.

A fully illustrated course of instruction in General Chemistry occupies two hours a week during the entire Freshman year.

Analytical Chemistry and Mineralogy.

PROFESSORS CORNWALL AND MCCAY.

MINERALOGY.—During the first term of the Sophomore year all undergraduate candidates for a degree are taught determinative mineralogy with the blowpipe, preceded by a short course in crystallography, embracing the simple forms of each crystal system and their commonest combinations. All the students are likewise taught to recognize by their physical characters the commoner ores and the commoner minerals having a technical importance, such as quartz, feldspars, barite, calcite, fluorite, gypsum, etc.

Text-books.—Cornwall's Manual of Blowpipe Analysis; J. D. Dana's Manual of Mineralogy and Lithology.

ANALYTICAL CHEMISTRY.—During the second term of the Sophomore year, the students attend lectures by Professor Cornwall, with recitations, and also work in the laboratory, under Professor McCay, pursuing the study of qualitative chemical analysis, with Fresenius's Manual as a guide. Five exercises in each week are given to the study of the detection of bases, together with instruction in the tests for the common acids, inorganic and organic. The subjects given during the Junior and Senior years are indicated in the exhibit of studies on a later page.

Botany.

PROFESSOR MACLOSKIE AND DR. RANKIN.

Botany is a required study during part of the second term of the Freshman year and the beginning of the Sophomore year, and occupies seventy-two exercises (two hours each). The work of the class is exclusively practical, and includes the examination of plants as to their morphology, histology, modes of development, and physiology. Students are taught to use their hands and eyes, to avail themselves of microscopical appliances and methods of staining, to master the characters of the larger orders of plants, and are exercised in phytography by describing and drawing what they see. The text-books and manuals are used for reference, but each student is expected to prepare his own text-book by original work on typical plants, and noting down the results. The neighborhood of Princeton is a favorable ground for botanical excursions, and an original thesis on some part of the work is required of every student.

Biology.

PROFESSORS MACLOSKIE, LIBBEY AND OSBORN, DR. RANKIN AND MR. PHILLIPS.

During the second term of Freshman year the students for the degree of B. S. attend, along with the Academic class, Professor Schanck's course in Human Anatomy and Physiology, one exercise per week. In the first term of Sophomore year Professor Macloskie and Dr. Rankin give an elementary course in zoology, thirty-two exercises of two hours each. This course includes lectures, with demonstrations and simple exercises on the most important types of animal structure. In the second term of Sophomore year, Professor Libbey gives a course in general histology, and in the second term of Junior year a course in practical and advanced histology. In the first term of Junior year Professor Osborn and Mr. Phillips conduct a course of recitations and practical exercises in general biology and the dissection of the lower vertebrate types, beginning with *Amphioxus*. The text-books used are Hurst's Practical Zoology, and Packard's Zoology.

These required courses are intended to give all candidates for the degree of B. S. a practical knowledge of the outlines of zoology, and to serve as an introduction to the elective courses in biology and chemistry of the Junior and Senior years.

Studies Pursued in Common with the Academic Classes.

The following studies are pursued either together with the Academic classes, or essentially as stated under the corresponding titles in the Academic course, and under the same instructors.

Psychology; Evidences of Christianity; political economy; English literature, the essays and orations required from the Senior class in the Academic course being replaced in the Scientific course by the preparation and reading of theses on scientific subjects; rhetoric and English language; oratory; physics; astronomy; geology; human anatomy and physiology.

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Psychology; Evidences of Christianity; political economy; English literature, the essays and orations required from the Senior class in the Academic course being replaced in the Scientific course by the preparation and reading of theses on scientific subjects; rhetoric and English language; oratory; physics; astronomy; geology; human anatomy and physiology.

COURSE IN GENERAL SCIENCE.

This is one of the three courses leading to the degree of Bachelor of Science, and is intended to afford instruction in science without specializing in any one department. Beside the studies required of all candidates for the degree of Bachelor of Science, the student is allowed liberty of choice from the following electives during the Junior and Senior years, subject to the conditions shown in the exhibit of studies.

ANALYTICAL CHEMISTRY.—This includes the applications of chemistry to medicine and hygiene, including toxicology, analysis of potable waters, adulterations of food, disinfectants. The lectures and recitations occupy two exercises a week through Junior and Senior years, and are the same as those given in the course in Biology and Chemistry.

DESCRIPTIVE MINERALOGY.—Taken with the students of the courses in Chemistry and in Biology and Chemistry. Junior year, first term, twice a week.

THEORY OF MACHINES.—Taken with the Civil and Electrical Engineering students. Senior year, second term, three times a week.

DESCRIPTIVE GEOMETRY.—Taken with the Civil and Electrical Engineering students. Junior year, first term, three times a week.

SHADOWS AND PERSPECTIVE.—Taken with the classes in Civil and Electrical Engineering. Junior year, second term, twice a week.

MECHANISM.—Taken with the classes in Civil and Electrical Engineering. Senior year, first term, twice a week.

STEREOTOMY.—Taken with the class in Civil Engineering, in Senior year, second term, twice a week.

SURVEYING.—This occupies two exercises a week during the first term of Junior year. It is designed to teach the student the outlines, principles and applications of the different subdivisions of geodesy, and to familiarize him, in a general way, with surveying practice, especially in its relation to business life.

ANALYTICAL MECHANICS.—This is taken with the classes in Civil and Electrical Engineering, and will occupy three exercises a week throughout the Junior year. During the present year it occupies five exercises a week during the second term of Junior year.

APPLIED MECHANICS.—This consists of the course in strength and elasticity of materials and is taken with the classes in Civil and Electrical Engineering. Senior year, first term, twice a week.

ELECTIVES TAKEN WITH CLASSES IN THE ACADEMIC DEPARTMENT.—(See pp. 29–56.)—Physiological Psychology. Advanced Logic. History (Sophomore Academic). Ancient History (5. I.) or English History (7. I.) (alternating courses). Mediæval and Modern History (6. II.) or American History (8. II.) (alternating courses). Public Law. American Constitutional Law. History of Political Theories. Administration. Pedagogics. Art and Archæology (General Courses). Italian. Practical Astronomy. Practical Physics (Course 3, p.49). Theoretical Physics (Course 4, p. 50). Physical Geography. Biology and Morphology (General and Advanced). Histology. Palæontology.

COURSE IN CHEMISTRY.

This course is designed to afford thorough instruction in analytical and technical chemistry, and students electing it enter upon the special studies of the course at the beginning of the second term of their Junior year. Beside the studies required of all candidates for the degree of Bachelor of Science, the following special studies are taken during the Junior and Senior years:

QUALITATIVE ANALYSIS.—This subject, previously pursued in the Sophomore year, is continued, so as to include the detection of inorganic and organic acids as well as bases, in complex substances.

QUANTITATIVE ANALYSIS.—A full course, including the analysis of chemical and metallurgical products, ores, fertilizers, sugar, water, etc. Volumetric methods are freely used whenever they are appropriate.

ASSAYING.—Furnace assay of ores; Bullion assays.

TECHNICAL CHEMISTRY AND APPLICATIONS OF CHEMISTRY to medicine and hygiene, including toxicology, analysis of potable waters, adulterations of food, disinfectants. Lectures and recitations.

In the above subjects the instruction embraces lectures by Professor Cornwall, with recitations upon the lectures and upon portions of the manuals mentioned below, and also laboratory practice (except in technical chemistry) under Professors Cornwall and McCay; the latter lecturing also upon volumetric analysis. All chemical reactions are fully explained by the use of chemical formulas, and the student must show that he understands the theory of all the operations he performs or describes.

The graduation thesis presented by the student must embody the result of the student's own work in the laboratory, whether it be experimental or analytical.

Text-books.—Fresenius's Manuals of Qualitative and Quantitative Chemical Analysis; Ricketts's Notes on Assaying. Reference is frequently made to other works and to scientific periodicals.

COURSE IN BIOLOGY AND CHEMISTRY.

This course* is recommended to students who intend, afterwards, to pursue the study of medicine. The special studies of the course begin with the second term of the Junior year, half of the time devoted to such studies being allotted to biology and half to chemistry. For the present year the division is made as follows:

I. BIOLOGY.—In this branch Professor Macloskie and Dr. Rankin give a series of exercises on the anatomy of type forms of invertebrate animals, on comparative physiology, and on the morphology and embryology of plants. The text-books recommended are: Packard's Zoology, Martin's Human Body, Foster's Text-book of Physiology, Brooks's Handbook of Invertebrate Zoology, Marshall and Hurst's Practical Zoology, Flower's Osteology, Huxley on the Crayfish, Haddon's Embryology, Leidy's Freshwater Rhizopods, Macloskie's Elementary Botany, Bessey's Botany, Sachs's Botany.

*This course is accepted by the College of Physicians and Surgeons in New York in place of six months' study with a preceptor, in case of a student who afterward attends three sessions at that college.

The course in vertebrate morphology and embryology is conducted by Professor Osborn and Mr. Phillips. The required study of the first term is continued in the second term of Junior year by lectures upon the brain, heart and other vertebrate organs, with a practical course of dissection of the frog and cod; also an introduction to the embryology of the chick, with the study of microscopic methods. The Senior course is designed as an introduction to human anatomy, and embraces a thorough study of comparative anatomy and dissection of the cat and rabbit. In the latter half of the year there is an advanced course in embryology. The text-books used are: Parker's Zootomy, Wiedersheim's Comparative Anatomy, and Haddon's Embryology.

During the second term Professor Libbey conducts one exercise a week in histological methods, in which the class are required to work practically upon subjects assigned, and to present theses upon the results obtained.

II. CHEMISTRY.—This part of the course will embrace classroom exercises under Professor Cornwall and laboratory work under his supervision, with the aid of Professor McCay. After learning how to make quantitative analyses of a number of simple and complex inorganic substances, by the use of gravimetric and volumetric methods, the students will study the properties of the various typical organic compounds, such as alcohols, carbo-hydrates, acids, etc., as well as of fats, urea, milk and other bodies of interest to the student of physiological chemistry, and will be trained in the methods of analyzing and estimating the same, reference being made to appropriate manuals and current scientific literature. Lectures will also be given upon the applications of chemistry to medicine and hygiene, including toxicology, analysis of potable waters, adulterations of food, disinfectants, and similar subjects.

COURSE IN CIVIL ENGINEERING.

This course is designed to fit its graduates for entering the profession of civil engineering. The degree conferred at its close on successful candidates is Civil Engineer (C. E.) The regular course of study occupies four years; but applicants who are found to be

suitably prepared are admitted to advanced standing. Bachelors of Arts who have pursued elective courses in Mathematics (see pp. 46, 47) and Bachelors of Science can ordinarily be prepared for the degree of C. E. by a two-years course in the technical studies required for that degree. But by a judicious selection of elective studies, a candidate for the degree of B. S. in the course in General Science can materially shorten the time which he will need for such preparation after receiving the bachelor's degree.

The requirements for entrance to the Freshman Class are the same as in the course for the degree of Bachelor of Science, except that no Latin is required. The regular course of study diverges from that in General Science at the beginning, but not so greatly as to make it difficult to change, if desirable, from one course to the other before the opening of the Sophomore year.

STATEMENT OF STUDIES.

Studies Pursued in Common with the Candidates for B. S.

The instruction in these studies is the same as stated on p. 82, *et seq.*, and under the same instructors. Modern languages (of the Freshman and Sophomore years); English literature; rhetoric; oratory; political economy; mathematics; physics; mechanical drawing; general astronomy; practical astronomy; general chemistry; geology; determinative mineralogy (of the Sophomore year).

Technical Studies.

In many of the technical studies of the course in Civil Engineering the instruction presupposes a thorough preliminary training of the student in mathematics. A thorough mastery of the ordinary divisions of this science is, therefore, indispensable to the successful study of such subjects as mechanics, physics, etc., which follow it.

Great stress is also laid in this course on the study of graphics as a science, both in its general development and in its application to the practice of designers and builders.

RATIONAL AND APPLIED MECHANICS AND THEORY OF MACHINES.—PROFESSORS MCMILLAN AND SMITH.—The instruc-

tion in these subjects covers a wide field of study, beginning with the general discussion of motions and the action of forces, and ending with the deduction of practical formulas relating to the strength and elasticity of materials, the stability of different structures, the power, efficiency and strength of hydraulic, steam and air motors, and to the various problems which arise in the practice of hydraulic engineers.

In dealing with these subjects, rigidly mathematical treatment is generally used, and higher analysis is freely employed wherever it is expedient; yet proper weight is given to methods of graphic analysis, and the student's attention is especially directed to those problems in which they can be employed with marked advantage.

EXPERIMENTAL MECHANICS.—PROFESSORS MCMILLAN AND SMITH.—The instruction in this study consists mainly of laboratory work. Its purpose is to familiarize the student with the physical properties of building materials; to teach him by actual experiment how to conduct tests and to deduce therefrom coefficients of strength, elasticity, etc.; how to determine coefficients of hydraulic flow and resistance; and how to gauge, by the aid of indicators and dynamometers, the power of steam and other motors. Under this head come also problems in the erection of structures.

AN ENGINEERING LABORATORY has been provided for this work. It contains the following experimental apparatus:—A torsional testing machine; a wire and cement tester; various kinds of current meters and water gauges; a Worthington water meter; a contrivance for determining the hydraulic slopes within earthen retaining banks; a flushing tank; a reaction wheel and other minor pieces of hydraulic apparatus; a double acting steam pump; a locomotive link and valve motion and a ten horse-power compound engine with condenser, indicators, gauges and a Prony brake.

The illustrative apparatus of the laboratory comprises rail sections and joints; specimens of the products of iron and steel mills and other building materials; a Sturtevant blower; models of water-wheels, of trestles and of the details of iron bridge and roof joints, of vaults and arches, and a 25-foot iron model of a single track railroad bridge, with a complete outfit of false-works and other appliances for its erection, designed especially for this College.

THE PLANNING AND CONSTRUCTION OF ENGINEERING WORKS. —PROFESSORS MCMILLAN AND SMITH.—This is treated in a course of lectures following the study of applied and experimental mechanics. The topics which receive special attention are given in the list of subjects under the heading "Constructions."

Great stress is laid on the application of correct principles and formulas; on the careful inspection, manipulation and preservation of materials, and on the economic features of various designs and the modes of executing them.

A large collection of lantern slides has been provided for illustrating this course. Among the more important photographic studies are a large number of views in detail of the East River suspension bridge at different stages of its progress.

An important feature of this part of the course consists of excursions for the examination of rolling mills, bridge works, machine shops, water works, etc. In these visits the class is accompanied by either the Professor or Assistant Professor of the department, and every member is required to make full notes of his observations and of the instruction received during the trip.

GEODESY.—MR. HARRIS.—The study of engineering field work is provided for in the different subdivisions of the course in Geodesy. The structure, adjustment and use of each instrument are made subjects of special attention, and no student is allowed to participate in any extended field operation until he has acquired a certain dexterity in handling the instruments used therein. The instruction in field work, beginning with the measurement of lines and angles, extends through different kinds of surveys in the order of their complexity and ends with problems in higher geodesy.

A special feature of the course is the stress laid on the collection and verification of field notes by each student, and on their proper use in the preparation of different kinds of plans, maps and charts of surveys. No error is allowed, in field work or in platting, which is not within the limits observed in current practice.

A very full collection of instruments has been provided for the course in Geodesy. It represents the work of twelve different firms of high repute; great care having been used to avoid the duplication of instruments by the same makers.

The collection consists of a twelve-inch geodetic transit, a large plane-table with telescopic alidade and a telemeter; engineer's, mining and solar transits; wye and dumpy levels; surveyor's compasses; mercurial and aneroid barometers; sextants; heliotropes; various forms of linear measures, and a large assortment of reconnoitring instruments.

TOPOGRAPHICAL DRAWING.—MR. HARRIS.—The object of this course is to make the student expert in the execution, in pen work and colors, of finished plans and maps of various kinds of surveys. Except in the necessary preliminary drill, the drawings invariably represent actual surveys made by the different classes. A rigid adherence to the field notes of each survey and a high degree of finish are required in the execution of these drawings.

GRAPHICS.—PROFESSOR F. N. WILLSON AND MR. WEBER.—The instruction in graphics includes the following branches:

Mechanical Drawing, as outlined in B. S. course on page 85.

Free-Hand Drawing. A short, practical course in the Freshman year, preparatory to the taking of sketches and measurements of railroad bridges or of machinery from which to make working and finished drawings later in the course.

Descriptive Geometry and Shades and Shadows. A course on the elementary problems of the point, line and plane in the four angles; on developable, double-curved and warped surfaces; trihedrals; the projection of shadows, etc. Junior year, first term, three times a week.

Perspective and Spherical Projections. In the course in perspective the methods employed in the present practice of the best American architects are studied and applied. In spherical projections, descriptive geometry is applied in the more important methods of map projection, as the stereographic, Mercator's, polyconic, etc. Junior year, second term, twice a week.

Structure Drawing. Drawings in plan and elevation, with sections and details, of railroad bridges or similar constructions of approved modern type, to scale, from sketches and measurements taken by the students. Freshman year, second term.

Mechanism and Machine Drawing. A course of lectures, recitations and practical exercises on the kinematics of machinery, with

graphical representation of mechanical movements; theory of link and valve motion; screw propulsion; gearing, including the theory and use of Willis's and Robinson's odontographs; working and finished drawings of machinery, etc. Senior year, first term, twice a week.

Stereotomy. A course on the application of descriptive geometry to stone-cutting, practically applied by the student in cutting a voussoir of plaster to a required shape by means of templets, patterns, etc., derived from his own drawings. Senior year, second term, twice a week.

THESIS.—Every candidate for the degree of Civil Engineer is required to prepare and submit to the approval of the Professor of Civil Engineering, a design for, or a review of, some special machine, structure or process, as a graduation thesis.

COURSE IN ELECTRICAL ENGINEERING.

The course in Electrical Engineering is designed to furnish instruction in the theory of electricity and in its application in the arts and industries. The special course of study in electricity occupies two years. The John C. Green School of Science furnishes a course in mathematics, physics aud modern languages which is especially arranged to meet the requirements for entrance on this course.

PRELIMINARY COURSE.

The requirements for entrance are the same as those of the Department of Civil Engineering, and the studies pursued in it are, in the main, the same as those of that department. They embrace mathematics to the completion of the calculus, analytical mechanics, mechanical drawing and descriptive geometry, physics, general and analytical chemistry, geology, astronomy, English language and literature, French and German. This preliminary course is completed at the end of the third year.

REQUIREMENTS FOR ENTRANCE.

Those who have taken this preliminary course are admitted to the course in Electrical Engineering without further examination. Applicants who have not taken this course will not be admitted un-

less they furnish evidence of suitable preparation in mathematics, physics and general chemistry. These studies are considered essential preliminaries to effective work in the course. If the applicant is deficient in analytical mechanics, drawing or modern languages, all of which studies are considered essential for the degree of Electrical Engineer, an opportunity will be given him to take suitable courses in those studies in the School of Science.

Course of Study.

First Year:—The mathematical theory of Electricity, Mascart and Joubert's Treatise on Electricity, Vol. 1, with references to Maxwell, Cumming and other authors.

General Electricity, Volume 4 of Wüllner's Experimental Physik.

These courses occupy eight hours a week throughout the year.

Elementary Electrical Measurements, with reference to Stewart and Gee, Kohlrausch, Slingo and Brooker, Gray, etc.

Two days in the week are left free for this work.

Strength of Materials and Mechanism, each, two hours a week, and Theory of Machines three hours a week for half the year, are taken with the Senior Class in the Civil Engineering Department.

Second Year:—The Theory of Electrical Measurements, Fleming's Alternate Current Transformer. Four hours a week for half the year. Mascart and Joubert's Treatise on Electricity, Vol. 2. Four hours a week for half the year.

Theory of Dynamo Construction, Thompson's Dynamo Electrical Machinery, with collateral lectures.

Technical Applications of Electricity in Telegraphy, Electro-metallurgy and Electro-chemistry, Electric lighting, Transmission of power. Four lectures a week throughout the year.

Advanced Electrical Measurements and Electrical Testing.

In addition to these courses a meeting is held once a week, at which reports on the current electrical literature are made by the students.

Degree.

On completion of this course the student is entitled to apply for the degree of Electrical Engineer. With his application, he must present a thesis on some subject connected with electrical science.

EXHIBIT OF STUDIES.

NOTE.—The numbers indicate exercises per week. Bible, Oratory and Essays are required throughout the four years.

COURSE IN GENERAL SCIENCE.

FRESHMAN YEAR.

First Term.		*Second Term.*	
Mathematics	5	Mathematics	5
Modern Languages	3	Modern Languages	4
Graphics	4	Graphics	1½
General Chemistry	2	General Chemistry	2
English	2	Botany	2½
		Anatomy	1

SOPHOMORE YEAR.

Mathematics	5	Mathematics	3
Modern Languages	3	Modern Languages	3
Determinative Mineralogy	4	Analytical Chemistry	5
Botany and Zoology	4	Drawing	1
		English	2
		Logic	2

JUNIOR YEAR.

REQUIRED.

Physics	4	Physics	4
Astronomy	2	Geology	2
Psychology	2	Political Economy	2
Modern Languages	2	Modern Languages	2
Mathematics†	4		

ELECTIVE.

Student takes 2 exercises this year; after this year, 5 or 6.		Student takes 5 or 6 exercises.	
History (5 or 7, v. p. 33.)	2	History (6 or 8, v. p. 33)	2
Public Law	2	Am. Constit. Law	2
History (Soph. Ac.)	2		
Morphology	2		
Advanced Logic*	2		

* Not given this year. † For this year only.

Analytical Chemistry*	2	Analytical Chemistry	2
Descriptive Mineralogy*	2	Histology	2
Descriptive Geometry*	3	S., S. and Perspective*	2
Mechanics*	3	Mechanics	5† 3*
Biology*	2	Biology	2
Surveying*	2		

SENIOR YEAR.

REQUIRED.

Modern Languages	3	Modern Languages	2
English*	2	English*	2
Astronomy†	2	Geology†	2
		Evidences of Christianity	1

ELECTIVES.

Only one study of any one group may be taken.

	Student takes 10 exercises.		Student takes 10 or 11 exercises.	
A.	Biology	2	Biology	2
			Theory of Machines	3
B.	Art and Arch. (M.)	2	Art and Archæology (F.)	2
	Analytical Chemistry	2	Analytical Chemistry	2
	Advanced Logic	2		
C.	Public Law	2	Am. Const. Law	2
	Theoretical Physics	2	Theoretical Physics	2
D.	Phys. Psychology	2	Histology	2
			Theory of Mach's (Tues.)	3
E.	Practical Physics	2	Practical Physics	2
F.	Hist. Polit. Theories	2	Administration	2
			Stereotomy	2
G.	Pract. Astronomy	2	Pract. Astronomy	2
	Palæontology	2	Palæontology	2
H.			Physical Geography	2
			Pedagogics	2
I.	Applied Mechanics	2		
	Morphology	2		
K.	Italian	2	Italian	2
	Mechanism	2		
	History (5 or 7, v. p. 33)	2	History (6 or 8, v. p. 33)	2

COURSE IN CHEMISTRY.

FRESHMAN YEAR.

First Term.		*Second Term.*	
Mathematics	5	Mathematics	5
Modern Languages	3	Modern Languages	4
Graphics	4	Graphics	1½
General Chemistry	2	General Chemistry	2
English	2	Botany	2½
		Anatomy	1

SOPHOMORE YEAR.

Mathematics	5	Mathematics	3
Modern Languages	3	Modern Languages	3
Determinative Mineralogy	4	Analytical Chemistry	5
Botany and Zoology	4	Drawing	1
		English	2
		Histology	2

JUNIOR YEAR.

Physics	4	Physics	4
Astronomy	2	Geology	2
Psychology	2	Political Economy	2
Modern Languages	2	Modern Languages	2
Analytical Chemistry*	4	Analytical Chemistry	6
Descriptive Mineralogy*	2		
Morphology†	2		
Mathematics†	4		

SENIOR YEAR.

Modern Languages	8	Modern Languages	2
English*	2	English*	2
Astronomy†	2	Geology†	2
Analytical Chemistry	11	Analytical Chemistry	11
		Evidences of Christianity	1

* Not given this year. † For this year only.

COURSE IN BIOLOGY AND CHEMISTRY.

The studies of Freshman and Sophomore years are the same as those in the course in Chemistry.

JUNIOR YEAR.

First Term.		*Second Term.*	
Physics	4	Physics	4
Astronomy	2	Geology	2
Psychology	2	Political Economy	2
Modern Languages	2	Modern Languages	2
Morphology	2	Morphology	4
Analytical Chemistry*	2	Analytical Chemistry	2
Descriptive Mineralogy*	2		
Mathematics†	4		

SENIOR YEAR.

Modern Languages	3	Modern Languages	2
English*	2	English*	2
Astronomy†	2	Geology†	2
Biology	2	Biology	2
Palæontology	2	Palæontology	2
Morphology	3	Morphology	5
Analytical Chemistry	2	Histology	2
Physiological Psychology	2	Evidences of Christianity	1

COURSE IN CIVIL ENGINEERING.

FRESHMAN YEAR.

Mathematics	5	Mathematics	5
Modern Languages	3	Modern Languages	4
Graphics	4	Graphics	1½
General Chemistry	2	General Chemistry	2
English	2	Geodesy	3½

SOPHOMORE YEAR.

Mathematics	5	Mathematics	5
Modern Languages	3	Modern Languages	3
Determinative Mineralogy	3	English	2
Geodesy	5	Geodesy	5
		Graphics	1

JUNIOR YEAR.

Physics	4	Physics	4
Astronomy	2	Geology	2
Mechanics	2† 3*	Mechanics	5† 3*
Descriptive Geometry*	3	S., S. and Perspective*	2
Mathematics†	4	Political Economy	2
Geodesy	4	Geodesy	3

SENIOR YEAR.

English*	2	English*	2
Astronomy†	2	Evidences of Christianity	1
Practical Astronomy	2		
Strength of Materials	2	Theory of Machines	3
Mechanism	2	Stereotomy	2
Constructions	2	Constructions	4† 2*
Technical Engineering	6	Technical Engineering	6

COURSE IN ELECTRICAL ENGINEERING.

FRESHMAN YEAR.

Mathematics	5	Mathematics	5
Modern Languages	3	Modern Languages	4
Graphics	4	Graphics	1½
General Chemistry	2	General Chemistry	2
English	2	Geodesy	3½

SOPHOMORE YEAR.

Mathematics	5	Mathematics	5
Modern Languages	3	Modern Languages	3
Determinative Mineralogy	4	English	2
		Drawing	1
		Analytical Chemistry	5

* Not given this year. † For this year only.

JUNIOR YEAR.

Physics	4	Physics	4
Astronomy	2	Geology	2
Psychology	2	Political Economy	2
Modern Languages	2	Modern Languages	2
Mechanics	2† 3*	Mechanics	5† 3*
Descriptive Geometry*	3	S., S. and Perspective*	2
Mathematics†	4		

For the outline of the two remaining years of the course, see p. 97.

In the following schedules the different courses are indicated as follows:

a = subjects required of all candidates for a degree.
b = required subjects in the course in General Science.
B = elective " " " " " " "
c = required " " " " " " Civil Engineering.
d = " " " " " " Chemistry.
e = " " " " " " Biology and Chemistry.
f = " " " " " " Electrical Engineering.

NOTE.—Oratory and Essays are required throughout the four years.

FRESHMAN FIRST TERM SCHEDULE.

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8	Elocution *c, f* Math. *b, d, e* 1 Mod. Lang. *c, f* 1	Graphics *b, d, e* Math. *c, f* 1	Graphics *b, d, e* Mod. Lang. *c, f* 1	Math. *b, d, e* 1 Graphics *c, f*	English *c, f*	Bible *a*
9	Math. *b, d, e* 1 Mod. Lang. *c, f* 1	Math *c, f* 2	Mod. Lang. *c, f* 2	Math. *b, d, e* 2	English *b, d, e* Math. *c, f* 1	Math. *b, d, e* 1 Mod. Lang. *c, f* 1
10	Math. *b, d, e* 2 Mod. Lang. *c, f* 2	Mod. Lang. *b, d, e* 1 Graphics *c, f*	Mod. Lang. *b, d, e* 1 Math. *c, f* 1	English *c, f*	Graphics *b, d, e* Math. *c, f* 1	Math. *b, d, e* 2 Mod. Lang. *c, f* 2
11	Chemistry *a*	Mod. Lang. *b, d, e* 2	Mod. Lang. *b, d, e* 2 Math. *c, f* 2	English *b, d, e*	Math. *c, f* 2	
3	Elocution *b, d, e*	Graphics *b, d, e* Math. *c, f* 1	Mod. Lang. *b, d, e* 1 Math. *c, f* 1	Math. *b, d, e* 1 Graphics *c, f*	Math. *b, d, e* 1 Graphics *c, f*	
4	Chemistry *a*	Math. *c, f* 2	Mod. Lang. *b, d, e* 2 Math. *c, f* 2	Math. *b, d, e* 2	Math. *b, d, e* 2	
5						

The numbers indicate divisions of the *b*, *d*, *e*, and *c*, *f*, portions of the class, and are independent in the different subjects.

FRESHMAN SECOND TERM SCHEDULE.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½	Botany* *b,d,e* 1 Geodesy* *c,f* 1	Mod. Lang. *b,d,e* 1 Geodesy *c,f* 1	Math. *b,d,e* 1 Graphics† *c,f* Geodesy* *c,f*	Graphics† *b,d,e* Botany* *b,d,e* Math. *c,f* 1	Anatomy *b,d,e* Mod. Lang. *c,f* 1	Bible *a*
9½	Math.† *b,d,e* 1 Math.† *c,f* 1	Mod. Lang. *b,d,e* 2 Geodesy *c,f* 2	Math. *b,d,e* 2	Math. *c,f* 2	Mod. Lang. *b,d,e* 1 Mod. Lang. *c,f* 2	Mod. Lang. *b,d,e* 1 Math.† *c,f* 1 Geodesy* *c,f*
10½	Math.† *b,d,e* 2 Math.† *c,f* 2	Math.† *b,d,e* 1 Botany* *b,d,e* Mod. Lang. *c,f* 1	Mod. Lang. *b,d,e* 1 Math. *c,f* 1	Math. *b,d,e* 1 Mod. Lang. *c,f* 1	Mod. Lang. *b,d,e* 2 Math. *c,f* 1	Mod. Lang. *b,d,e* 2 Math.† *c,f* 2
11½	Chemistry *a*	Math.† *b,d,e* 2 Mod. Lang. *c,f* 2	Mod. Lang. *b,d,e* 2 Math. *c,f* 2	Math. *b,d,e* 2 Mod. Lang. *c,f* 2	Math. *c,f* 2	
3		Math. *b,d,e* 1 Graphics† *c,f* Geodesy* *c,f*	Graphics† *b,d,e* Botany* *b,d,e*	Graphics† *b,d,e* Botany* *b,d,e* Math. *c,f* 1	Math. *b,d,e* 1 Graphics† *c,f* Geodesy* *c,f*	
4	Chemistry *a*	Math. *b,d,e* 2	Mod. Lang. *c,f* 1	Math. *c,f* 2	Math. *b,d,e* 2	
5			Mod. Lang. *c,f* 2			

NOTE.—† During first half of the term. * During second half of the term.

The numbers indicate divisions of the *b*, *d*, *e* and *c*, *f*, portions of the class, and are independent in the different subjects.

SOPHOMORE FIRST TERM SCHEDULE.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8	Botany *b,d,e* Mineralogy *c*	Botany *b,d,e* Mod. Lang. *c*	Mod. Lang. *b,d,e,f* Geodesy *c*	Math. *b,d,e,f*	Math. *b,d,e,f* Mineralogy *c*	Bible *b,d,e,f* Mineralogy *c*
9				Mod. Lang. *c*		
10	Mineralogy *b,d,e,f* Geodesy *c*	Mineralogy *b,d,e,f*	Mineralogy *b,d,e,f*		Botany *b,d,e*	Mineralogy *b,d,e,f* Bible *c*
11		Math. *c*	Math. *c*	Mod. Lang. *b,d,e,f* Math. *c*	Mod. Lang. *c*	
8	Geodesy *c*	Botany *b,d,e* Geodesy *c*	Math. *b,d,e,f* Geodesy *c*		Math. *c*	
4	Math. *b,d,e,f*			Mod. Lang. *b,d,e,f* Math. *c*	Math. *b,d,e,f*	
5						

SOPHOMORE SECOND TERM SCHEDULE.

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8½		Math. *b,d,e* Mod. Lang. *c,f*	Math. *b,d,e* Mod. Lang. *c,f*	An. Chem. *b,d,e,f* Geodesy *c*	Drawing *b,d,e,f* Graphics *c*	Bible *a*
9½	English *a*					
10½	An. Chem. *b,d,e,f* Geodesy *c*		An. Chem. *b,d,e,f* Geodesy *c*	An. Chem. *b,d,e,f* Geodesy *c*		
11½		Mod. Lang. *b,d,e* Math. *c,f*			Logic *b* Histology *d,e* Math. *c,f*	English *a*
3	An. Chem. *b,d,e,f* Geodesy *c*			Logic *b* Histology *d,e* Math. *c,f*		
4		Math. *b,d,e* Mod. Lang. *c,f*	Mod. Lang. *b,d,e* Math. *c,f*		Mod. Lang. *b,d,e* Math. *c,f*	
5						

JUNIOR FIRST TERM SCHEDULE.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8			Mathematics *a*	Mod. Lang. *b,d,e,f* Geodesy *c*	Mod. Lang. *b,d,e,f* Geodesy *c*	Bible *a*
9				History *B*		Graph. Statics *c*
10	Astronomy *a*	Astronomy *a*	Morphol. *B,d,e* Geodesy *c*	Morphol. *B,d,e* Geodesy *c*		Psychol. *b,d,e,f*
11	Physics *a*	Physics *a*	History *B*		Mathematics *a*	
3				Mathematics *a*	Graph. Statics *c*	
4			Mathematics *a*		Psychol. *b,d,e,f*	
5	Physics *a*	Physics *a*	History *B*	History *B*		

JUNIOR SECOND TERM SCHEDULE.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8½			Mod. Lang. *b,d,e,f*	An. Chem. *B,d,e* Mechanics *B,c,f*	An. Chem. *B,d,e* Mechanics *B,c,f*	Bible *a*
9½			An. Chem. *d*			Mechanics *B,c,f*
10½	Geology *a*	Geology *a*	Am. Const. Law *B* Morphology *e* Geodesy *c*	Am. Const. Law *B* Geodesy *c* A. C. *d*; Morph. *e*.	Geodesy *c*	Pol. Economy *a*
11½	Physics *a*	Physics *a*			Mod. Lang. *b,d,e,f*	
3			Biology *B,c* An. Chem. *d*	Mechanics *B,c,f* An. Chem. *d*		
4			Mechanics *B,c,f*	Biology *B,e*	Pol. Economy *a*	
5	Physics *a*	Physics *a*	History *B*	History *B*		

SENIOR FIRST TERM SCHEDULE.

	MONDAY.	TUESDAY.	WEDNESDAY.	THURSDAY.	FRIDAY.	SATURDAY.
8		Hist. Pol. Theor. *B* Anal. Chem. *d* Tech. Electr. *f*	Str. of Mat's *B,c,f* Morphology *B,e* An. Chem. *d*	Mod. Lang. *b,d,e* Engineering *c* Tech. Electr. *f*	Mod. Lang. *b,d,e* Mechanism *c,f*	Bible *a*
9	Mat's & Constr. *c*, A.C.*d*; Morphol. *e* Tech. Electr. *f*	Pract. Astr. *B,c* Palæont. *B,e*	Biology *B*	Biology *B* An. Chem. *d*	Mechanism *B* An. Chem. *d,e*	Mechanism *B,c,f*
10	An. Chem. *d* Tech. Electr. *f*	An. Chem. *d* Tech. Electr. *f*	Public Law *B* Theor. Phys., *B,f* Biol. *B,e*; A.C. *d*	Public Law *B* Theor. Phys. *B,f* Biol. *B,e*; A.C. *d*	Hist. Pol. Theor. *B* An. Chem. *d,e*	Mod. Lang. *b,d,e*
11	Mat's & Constr. *c* Phys. Psych. *B,e*	Engineering *c* Phys. Psych. *B,e*	Engineering *c*	Engineering *c*	Str. of Mat's *B,c,f* Morphology *b*	
3	Astronomy *a*	Astronomy *a*	Art & Archæol. *B* Adv. Logic *B* An. Chem. *B,d,e*	Pract. Phys. *B,f* An. Chem. *d,e*	Pract. Astr. *B,c* Palæo. *B,e*; A.C.*d* Tech. Electr. *f*	
4			Pract. Phys. *B,f* Engineering *c*	Art & Archæol. *B* Adv. Logic *B* A.C.*d*; Eng'g *c*		
5	Italian *B*	Italian *B*	History *B*	History *B*		

SENIOR SECOND TERM SCHEDULE.

	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.
8½	An. Chem. *d* Tech. Electr. *f*	Administration *B* Stereotomy *B,c* An. Chem. *d* Tech. Electr. *f*	Adv. Biology *e* An. Chem. *d*	Mod. Lang. *b,d,e*	Mod. Lang. *b,d,e* Engineering *c* Tech. Electr. *f*	Bible *a*
9½	Engineering *c* Morphology *e*	Pract. Astr. *B* Palæont. *B,e*	Theor. Mach. *B,c,f* Biology *B*	Theor. Mach. *B,c,f* Biology *B,e*	An. Chem. *d* Morphology *e*	
10½	An. Chem. *d* Tech. Electr. *f*	Phys. Geog. *B* Pedagogics *B* An. Chem. *d*	Am. Const. Law *B* Theor. Phys. *B,f* An. Chem. *d* Adv. Biology *e*	Am. Const. Law *B* Theor. Phys. *B,f* An. Chem. *d*	Administration *B* Stereotomy *B,c* Tech. Electr. *f*	Ev. of Christ. *a*
11½	Engineering *c* Histology *B,e*	Prime Mot. *B,c,f* Histology *B,e*	Engineering *c*	Engineering *c*		
3	Geology *b,d,e* Tech. Electr. *f*	Geology *b,d,e* Tech. Electr. *f*	Art & Archæol. *B* An. Chem. *B,d* Morphol. *e*	Pract. Phys. *B,f* An. Chem. *d* Morphology *e*	Pract. Astr. *B* Palæont. *B,e* An. Chem. *d* Tech. Electr. *f*	
4	Engineering *c*	Engineering *c*	Pract. Phys. *B,f* Engineering *c*	Art & Archæol. *B* Engineering *c* An. Chem. *B*	Phys. Geog. *B* Pedagogics *B* Engineering *c*	
5	Italian *B*	Italian *B*	History *B*	History *B*		

EXAMINATIONS, STANDING, AND GRADUATION.

EXAMINATIONS.

Regular examinations ordinarily take place at the end of a term, each class being examined in the studies of the term. Occasionally when a course of study is finished before the close of a term, the examination takes place when that study is completed; but such examinations are not allowed to interfere with the regular exercises in other studies.

Examinations are for the most part conducted in writing, but in certain subjects are wholly or partly oral. Private examinations are not allowed except in extreme cases, and by special permission of the Faculty. Absence from an examination, except for reasons of absolute necessity, will be regarded as a serious delinquency, and a subsequent examination will not be granted except by a vote of the Faculty.

Regulations for Removal of Conditions and for Omitted Examinations.

The maximum mark is one hundred.

The minimum mark for passing in any subject is sixty.

I. Students conditioned at the end of the first session will have one opportunity of removing such condition during the first month of the second session. If they again fail, no other opportunity will be given until the following September, except by special vote of the Faculty.

II. All deficiencies, whether from conditions or omitted examinations, standing against any student at the end of the College year, must be made up within three days after the opening of the College in the following September, unless longer time is specially

granted by the Faculty. Such extension of time will not usually be granted except in cases of serious illness or for other providential causes.

III. Students failing to remove all conditions within the time allowed them in September, must repeat with the next lower class the courses of study in which they have failed; and the Faculty will determine in each case, as to the student's ability to continue other studies with his original class.

It will ordinarily follow that such student cannot complete his course of study in time to receive a degree with that class. If the studies in which he is allowed to continue occupy more than one-half of his schedule time, his name will be printed in the Annual Catalogue with his original class, but marked "*Not candidate for a degree with this class.*" If nôt more than one-half, he will be enrolled with a lower class.

IV. Unexcused absence from any examination, whether regular or special, in any subject, will be regarded as an absolute failure involving a condition in that subject.

Excused absence from examinations at the end of the first session must be made up within the first month of the second session unless longer time is granted by the Faculty.

V. If any student is persistently neglectful of his studies after due admonition, his parent or guardian will be informed of the fact, and if no satisfactory improvement follows, will be requested to remove him from College.

STANDING.

The results of the term examinations are combined with those of the recitations to decide the relative standing or rank of the student during the term. In computing ranks, each study, elective or required, is estimated relatively to the others according to the number of hours which it occupies in the weekly schedule of lectures and recitations. The conduct of the student and his attendance also affect his standing. The maximum mark in each department is one hundred; the minimum, or passing mark, is sixty. A student whose average, as determined by the combination of his examination and recitation marks, falls below sixty, is conditioned, and in order

to continue with his class must be re-examined. A report of the standing of each student is made to his parent or guardian by the Registrar of the College at the close of the first term and at the end of the year. The last report gives the student's standing for the year.

The final rank of a student is calculated from all the marks received by the student during his College course.

GRADUATION.

Students who have fulfilled the requirements of their undergraduate courses, passing satisfactory examinations in all their studies and presenting acceptable graduation theses, are ordinarily recommended by the Faculty for the degree attached to the course they have pursued, and if the recommendation is approved by the Trustees they receive diplomas signed by the President and the Clerk of the Board of Trustees.

The subjects selected for the graduation theses must be reported to the Faculty, by the candidates for the degree of C. E., on or before the first Monday of October, and by the candidates for the degree of B. S. on or before the second Monday of January, of their Senior year.

The graduation theses must be finished by the second Saturday before Commencement (*i. e.*, May 30, 1891), and will be publicly read and defended by the student during Commencement week.

UNIVERSITY COURSES

IN THE

ACADEMIC AND SCIENTIFIC DEPARTMENTS.

Provision has been made for courses of instruction open to resident graduates of this and other Colleges, under the following regulations:

Every instructor in the College shall be at liberty, with the leave of the Faculty, to give instruction to graduates. He shall meet with his class for at least one hour a week, and not more than three hours a week, during the Academic year, and shall require the members of his class to undergo rigid examinations on the course pursued.

Each graduate student attending instruction regularly, and passing the examinations, is entitled to a certificate stating what he has done, signed by the President in behalf of the College.

Students by pursuing these courses may also qualify themselves for the degrees: Master of Arts, Master of Science, Doctor of Philosophy, Doctor of Literature, or Doctor of Science; according to the regulations prescribed under the heading "Higher Degrees."

Each graduate student shall pay ten dollars, or such sum as the Faculty may require, for every course of instruction that he enters requiring an hour per week, and shall defray whatever expense may be incurred by the use of instruments and materials employed by him. This charge may be remitted in whole or in part when the circumstances of the student require it. All undergraduate courses of lectures or instruction are also open to graduate students without the payment of any fees except for material used. Charges will be made for courses in Analytical Chemistry, the amount to depend on the nature of the course pursued.

Arrangements for the University courses should be made by application to the individual instructors.

University courses in the following subjects are announced for the present year: Theoretical ethics, science and religion, Plato and his philosophy, modern philosophy, history, Latin, pedagogics, Greek architecture, archæology, English language, Sanskrit, Semitic languages, physics, higher mathematics, theoretical astronomy, biology.

Opportunity is also offered to graduates for work in the following subjects, in connection with the regular undergraduate courses: Anglo-Saxon, English literature, psychology, history of philosophy, metaphysics, ethics, science and religion, history of art and archæology, international, constitutional and Roman law, geology, mineralogy, biology, physics, practical astronomy, Senior mathematics, analytical and applied chemistry, assaying, topography, civil engineering.

UNIVERSITY COURSES.

Theoretical Ethics.

The President lectures one hour a week throughout the first term on Theoretical Ethics.

Science and Religion.

The undergraduate course in this department will be followed by a graduate course in the history and the logic of the sciences, treating of their emerging problems as connected with revealed religion. Professor Shields will lecture one hour a week during the second term.

Plato and His Philosophy.

Professor Orris offers a University course in Plato, giving analyses of his dialogues, lectures and dictations on his philosophy, and instruction in the language in connection with the reading of the Phædo and parts of the Republic.

One hour a week during the first and second terms.

Modern Philosophy.

Professor Ormond will give one lecture a week throughout the year on modern philosophy. The course will embrace the philosophies of Descartes, Spinoza, Locke, Leibnitz, Reid, Kant and Spencer. Select passages for reading and discussion will be assigned in connection with the lectures.

History.

Professor Sloane conducts one exercise of two hours each week throughout the second term. Subject: Parliamentary and Congressional Government.

Christian Archæology.

This course, which consists of a detailed study of the early catacombs and their relation to Christian worship, life and art, will be conducted once a week during the second term by Professor Frothingham.

Greek Architecture.

Professor Marquand gives a course in Greek Architecture. Two hours a week throughout the year.

Oriental Archæology.

Professor Frothingham conducts one exercise a week during the first term on questions of Oriental archæology which relate to the influence exercised by the Orient upon the early development of Greece.

Pedagogics.

A University course is offered by Professor West in pedagogics during the second term. It consists of the study of leading educational works and systems and of the theory of education. A thesis is required in addition to the examination at the close.

Latin.

Professor Packard's course for graduates is, Bruns, Fontes Juris Romanis Antiqui, with study of primeval History of Rome,

and use of Corpus Inscriptionum Latinarum and Ritschl, Priscæ Latinitatis Monumenta.

English Language.

A University course in English Philology will be offered by Professor Hunt. In the first term, Anglo-Saxon will be studied two hours a week, the authors used being Beôwulf, Cædmon's Exodus and Daniel, Cynewulf's Elene. In the second term, Middle English will be studied, two hours a week, the authors being, Morris and Skeat's Specimens of Early English, Langlande's Piers the Plowman, Chaucer's Prologue. A course in Gothic will also be offered.

Sanskrit.

Graduate students may begin Sanskrit with the Senior elective class, or continue studies already begun. For outline of course see p. 45.

Semitic Languages.

Professor Frothingham conducts the following courses as a continuation of the undergraduate course in Hebrew.

Syriac language and literature, once a week through the year.

Arabic language and literature, twice a week through the year, with Socin's Grammar and Arnold's Chrestomathy.

Professor J. D. Davis, of the Theological Seminary, conducts a class open to resident Graduate students of the College, in *Advanced Hebrew*, including the study of comparative Semitic grammar. Five hours a week through the year.

Physics.

These courses afford opportunity for advanced work in the laboratory and for the study of theoretical physics. In the laboratory the student is either conducted through courses covering general topics, such as heat, optics, or electricity, which are similar to the courses of the Senior year, but more extended and exhaustive in their character; or, if he so desires, is encouraged to undertake for himself the investigation of special topics. In the theoretical

courses the student reads, for a general survey of the subject of mathematical physics, some standard text-book such as Jamin and Bouty's Cours de Physique, and for the mathematical theory of the particular subject he is working upon, special treatises, such as Fourier's Analytical Theory of Heat, Verdet's Théorie Mécanique de la Chaleur, Verdet's Leçons d'Optique Physique, Mascart and Joubert's Electricity and Magnetism, Maxwell's Electricity and Magnetism, Kirchhoff's Mechanik, etc. Professors Brackett and Magie and Mr. Dodd conduct these courses.

Higher Mathematics.

University courses are offered this year in:

(1.) Differential Equations. *Forsyth* and *Boole.* Professor Fine.

(2.) Theory of Functions. *Durége* and *Clebsch und Gordan.* Professor Fine.

(3.) Elliptic Functions. *Weierstrass-Schwarz* and *Enneper.* Professor Fine and Dr. Thompson.

(4.) Higher Algebraic Curves and Surfaces. *Salmon.* Professor Fine.

Astronomy.

This course is conducted by Professor Young and Mr. Reed. It consists of:

(a) Practical Astronomy—the same as the Senior elective, previously described in the course of study of the Academic department. This is open to such graduates as did not take it in their college course.

A more extended course is given to candidates for the degrees of Ph.D. or D.Sc.

(b) Theoretical Astronomy—one hour weekly through the year. This course consists of the reading of Watson's Theoretical Astronomy, supplemented by selections from Oppolzer and Klinkerfues.

Biology.

A thorough advanced course in Biology has been established in connection with the Geological, Zoological, Botanical, and Chemical

departments, the objects in view being: (1) to foster a spirit of original research, (2) to qualify advanced students to become teachers. This course is open to college graduates, also to students presenting diplomas from recognized medical schools.

It is not restricted to students who are candidates for a degree, if they possess sufficient elementary knowledge to profit by the instruction.

The following subjects of instruction are arranged for:

Professor Macloskie—I. Anatomy and embryology of the higher invertebrates. II. Vegetable morphology and histology.

Professor Cornwall—Physiological chemistry.

Professor Libbey—I. The microscope and microscopic technology. II. Histology. III. Deep sea soundings and dredgings; recent methods and results.

Professor Osborn—I. Comparative anatomy of the vertebrates. II. Elements of embryology.

Professor Scott—I. Vertebrate and invertebrate palæontology. II. Advanced embryology.

These courses are of a comprehensive and elastic character, and according to the requirements and wishes of different students, include much laboratory work under the direction of the instructor. At the close of the first term, the student may select a department of special study for his thesis, which must present the results of original work.

HIGHER DEGREES.

Master of Arts.

The degree of Master of Arts (A. M.) is conferred, three years after graduation, upon any Bachelor of Arts of this College who is pursuing one of the learned professions (including teaching), or who, on or before May 1st of the year in which he seeks the degree, shall have submitted to a committee appointed by the Board of Trustees, a satisfactory paper, literary, philosophical or scientific.

The same degree may be conferred, two years after graduation, upon any Bachelor of Arts who shall have devoted one of the years exclusively to study in the College under the care of the Faculty, passing examinations upon the studies pursued; or who shall have taken at least one University course each year for the two years and passed satisfactory examinations upon his work.

Master of Science.

Bachelors of Science who shall have devoted one year in the College exclusively to the study of such of the following subjects as the Faculty shall prescribe, and who shall have shown satisfactory proficiency therein by dissertations and examinations, may apply for the degree of Master of Science (M. S.). The prescribed subjects are:—Biology, mathematics, rational and applied mechanics, practical astronomy, applied chemistry, qualitative analysis, quantitative analysis, physics, mineralogy, graphics, modern languages.

Any Bachelor of Arts, who after examination may be found to be prepared to pursue a University course in science, may become a candidate for the degree of Master of Science on the same conditions as a Bachelor of Science.

University Degrees.

The following degrees are classed as University Degrees: Doctor of Philosophy (Ph.D.), Doctor of Literature (Litt.D.), Doctor of

Philosophy in Science (Ph.D.), Doctor of Science (D.Sc.) and Bachelor of Divinity (B.D.)

Any person who desires a more complete statement than that given below in regard to the requirements and regulations concerning any one of the University degrees can obtain the same upon application to the President.

General Regulations.

Every candidate for one of the above doctorates must be a graduate of some approved college. If he has the degree of Bachelor of Arts he may apply for admission to the courses for any of the doctorates; but if he has the degree of Bachelor of Science or an equivalent degree, the courses for Ph.D. in Science and D.Sc. only are open to him.

Every applicant shall appear in Princeton on the fourth Wednesday in September to pass a preliminary examination upon certain subjects which are intimately connected with his proposed course of study and which are necessary for its successful prosecution.

The candidate having fulfilled the requirements for admission, must then adopt one of the following plans for his work:

1. He may pursue a course of prescribed study for two years, one year at least of which is to be spent in Princeton in the exclusive study of branches in his chosen department.

2. He may without residence in Princeton pursue a course of study for three years under the direction of a committee of the Faculty appointed for the purpose. This plan does not demand the exclusive employment of the candidate's time in prescribed study for the degree.

At the beginning of the course the candidate shall announce for approval by the Faculty some department as his chief subject of study, and during the first year of his course, he shall also announce for approval by the Faculty two subsidiary subjects.

At an appointed time during the last year of his course the candidate shall present a thesis on some special topic in the department which constitutes his chief subject. This thesis must present evidence of high scholarship and original research.

At the close of his course the candidate must pass a final examination on both his chief and subsidiary subjects of study. He will not

be admitted to the examination unless his thesis has been accepted. It is further required of a candidate for the degrees of Ph.D. in Science or of D.Sc. that he publish his thesis, before the degree will be conferred.

In order to meet the expenses of examinations, each person applying for a doctorate shall pay a fee of forty dollars upon first application, twenty dollars each subsequent year of the course, and fifty dollars before entering the final examinations.

If the candidate is pursuing studies in Princeton he shall pay, in addition to the above mentioned sums, the regular fees for such University courses as he may take (see p. 115).

Bachelor of Divinity. (B.D.)

This degree may be conferred upon a Bachelor of Arts of any approved college who shall also have completed a three years' course of theological study in any approved institution, followed by a two years' course of prescribed study in theology. This special course of study shall be prescribed, and all examinations required shall be conducted by examiners designated by the Board of Trustees.

The regulations as to preliminary examinations, chief and subsidiary subjects of study, thesis and final examination are similar to those pertaining to the doctorates, except that only one subsidiary subject is required. Residence in Princeton is not necessary for obtaining the degree.

The fees are the same as those paid by candidates for the Doctor's degrees.

UNIVERSITY FELLOWSHIPS.

These fellowships were founded by subscription and endowment and are intended by the founders to encourage study and promote original research in the several departments to which they are assigned. They are distinguished from the college fellowships by being open to the graduates of any American college, while the appointments are made, not by competitive examination, but by a

comparison of the records presented by the applicants as to their previous collegiate standing, capacity and character.

The University Fellowships are subject to the following regulations:

1. The Fellowships are to be held for one year, but in cases of special merit they may be continued for a longer period, by recommendation of the department and sanction of the Faculty.

2. The candidates shall be graduates of not more than five years' standing of any accredited American college. An application should be accompanied with evidence of the qualifications of the applicant to pursue an independent course of study and investigation in the department concerned.

3. Appointment shall be made by the Faculty upon recommendation of the professors in the department interested, and shall be announced at Commencement.

4. All applications must be in the hands of the Registrar of the College on or before May 15th, the appointees to hold their positions for a year from the following September.

It is deemed essential to the development of the University department that the number of these fellowships should be largely increased. The following have already been founded:

THE SOUTH EAST CLUB UNIVERSITY FELLOWSHIP IN SOCIAL SCIENCE.

This fellowship pays to the holder $500 per annum.

THE CLASS OF 1877 UNIVERSITY FELLOWSHIP IN BIOLOGY.

This fellowship pays to the holder $400 per annum.

THE UNIVERSITY FELLOWSHIP IN ENGLISH.

This fellowship pays to the holder $400 per annum.

THE UNIVERSITY FELLOWSHIP IN ARCHÆOLOGY.

This fellowship pays to the holder $400 per annum.

COLLEGE FELLOWSHIPS, COMPETITIVE SCHOLARSHIPS AND PRIZES.

Besides the degrees and honors conferred in the regular course, annual fellowships, competitive scholarships and prizes are offered as special incentives to study, in the classes or departments with which they are connected.

Only matriculated students who are candidates for a degree are admitted to the competition for these fellowships, prizes and scholarships, and no one is admitted to such competition who has failed to pass satisfactorily his last preceding examination in any of the departments.

No member of any class is allowed to compete for more than one of the fellowships or scholarships offered to that class.

The names of the college fellows, scholars and prizemen of each year are included in the Honor List for the year.

The funds for the college fellowships, prizes and competitive scholarships are special gifts, and the income is appropriated according to the specific instructions of the donor. They do not belong to the general funds of the College. If, therefore, there be default in the interest on the securities in which these funds are invested, the College assumes no pecuniary responsibility in the matter.

FELLOWSHIPS.

Every competitor must have been a member of the College in full standing for at least two Academic years previous to the fellowship examinations.

No student whose final rank for scholarship is below the second general group can be a competitor for any fellowship; and no student can be a competitor for the fellowship of any particular department whose average rank for the last two years of his course is below the first group in that department.

Every Fellow obtaining any one of the $600 fellowships must devote his whole time for one year to study in the department for which the fellowship is provided, under the direction of the Professors in that department. He must reside in Princeton, and pass two rigid examinations on his work, unless by a vote of the Faculty he be allowed to study at an approved foreign university, in which case he shall from time to time furnish written reports of his work to the Professors in his department. The result of every examination and the reports of work done abroad shall be immediately reported to the Faculty. If resident in Princeton, he shall be allowed to occupy free of cost in one of the College buildings a room assigned to him by the College authorities. He shall be regarded, while occupying such place, as a resident officer of the College, and shall perform such duties in preserving order and decorum in the College edifices as the President and Dean shall assign. He shall also, when called upon, perform such duties in the department to which he belongs as may be assigned to him by the President at the request of the Professors in that department.

THE CHANCELLOR GREEN MENTAL SCIENCE FELLOWSHIP.

This fellowship, originally founded in 1870 upon the annual payment of $600 by the late Chancellor Henry W. Green, was permanently endowed in 1878 by a gift of $10,000 by his widow.

The income of this fund, to be paid quarterly, will be awarded to that member of the Senior class who shall write the best essay on Theories of Knowledge, with an examination of Realism, Idealism and Agnosticism (to be given in on or before June 1), and who shall stand highest at a special examination to be held in June, on the following subjects:

The examination will be founded on the philosophies of Plato, Aristotle, Descartes, Locke, Leibnitz, Hume, Reid and Kant; also Theoretical Ethics, Metaphysics, Psychology and Inductive Logic.

The subject of the essay for 1892 will be, Modern Theories of Space-Perception and their bearing on Apriori Truth.

THE CLASSICAL FELLOWSHIP.

The Classical fellowship has been, for a time, without funds. The sum of $600, payable quarterly, was previously awarded to the

successful competitor. For several years the Fellowship has depended on the generous contribution of half that amount annually. An honorary appointment, with the privileges attached to Fellowships, or such sum as may be received for the current year will be awarded to that member of the Senior class who shall stand highest at a special examination, to be held in June, 1891, on the following subjects:

IN GREEK.

Translation from English into Greek. Translation of Prose Greek at sight. The *Alcestis* of Euripides, Aristophanes's *Frogs*, Plato's *Charmides* and *Lysis*. The Philosophy of Plato.

IN LATIN.

Translation from English into Latin. Translation of Latin at sight. Cicero *de Finibus*, and the Relations of Roman Philosophy to Roman Religion. History of Latin Literature.

THE CLASS OF 1860 EXPERIMENTAL SCIENCE FELLOWSHIP.

This fellowship was founded in 1870 upon the sum of $10,000 subscribed by the Class of 1860. A deficiency of income, resulting from the depreciation of the value of the securities in which the principal was invested and the lowering of the rate of interest, is paid, by the consent of the donor, from the income of the Magee Professorship of Mining and Engineering, founded by George J. Magee, Esq., of the Class of 1860.

The sum of $600, to be paid quarterly, will be awarded to that member of the Senior class who shall stand highest at a special examination, to be held in June, on the following subjects, viz: 1. The theory of electricity. 2. (a) The geology of coal, oil and gas. (b) The history of reptiles and birds. 3. Iron and steel.

THE J. S. K. MATHEMATICAL FELLOWSHIP.

The J. S. K. Fund was established in 1873 upon the sum of $11,000, given by a gentleman in New York, $600 of the income of which is devoted to this fellowship, and $200 to the Freshman First Honor prize.

This fellowship will be awarded to that member of the Senior class who shall stand highest at a special examination to be held

in June, on the following subjects: Analytical geometry; differential and integral calculus.

THE BOUDINOT FELLOWSHIPS.

These fellowships are founded in part upon a bequest of Dr. Elias Boudinot, of New Jersey.

THE HISTORICAL FELLOWSHIP.—The sum of $400 per annum, to be paid quarterly, will be given to the holder of the Fellowship, who shall be appointed by the Faculty, upon the nomination of the President and the Professor or Professors of History, for any period not exceeding three years, on condition that he reside in Princeton and devote his whole time to historical research, that he deliver such lectures and conduct such exercises as the President and the Professor or Professors of History shall direct, and that he perform such other duties as may be assigned him in accordance with the general regulations respecting the duties of resident Fellows. A Fellow is to be appointed in 1891.

THE MODERN LANGUAGE FELLOWSHIP.—The sum of $200, to be paid quarterly, will be awarded to that member of the Senior class who shall pass the best examination in June, on the following subjects:

A comprehensive knowledge of the French and the German descriptive grammars. Also, the origin and historical development of these languages. In Literature—The mediæval epics of France and Germany, with the sources of their inspiration. Also, their lyrical poetry and its representatives; the leaders of the classical drama in France in the 17th century; the current of thought in the 18th century—its exponents and results. A comparative view of Germany's intellectual state before and after the Reformation. Significance of the "Sturm und Drang" period with its chief participants. The current of thought in Germany from the time of her mental emancipation from foreign influences to the present day. Reading at sight of any given author of the classical or the recent period. An essay of not less than four pages (foolscap) in one of these languages. The examination will be conducted both orally and in writing.

Competitors for the Fellowship shall hand in, on the first Monday of every month, written synopses of such subjects as their instructors in these languages may have designated for them to read.

The Fellow shall from time to time during the following year, as may be required by the Professors of Modern Languages, give evidence by written papers that he is reading such a course as the Professors may approve.

THE E. M. BIOLOGICAL FELLOWSHIP.

The Biological fellowship will be awarded to that student who shall stand highest at a competitive examination on subjects assigned by the Professors of the Biological department.

The competition for this fellowship will be open to any member of the Senior class in either the Academic or Scientific department, or to any college graduate who shall have pursued during the preceding year, the university course in Biology at Princeton, and who shall, in the opinion of the examiners, be deemed competent to pursue the subject advantageously.

This fellowship conveys the use of a table in the National Seaside Laboratory at Wood's Holl, Mass., together with all the facilities afforded for the collection and study of animal life during the season favorable for such investigations. In the winter months following this laboratory work the Fellow will pursue his studies at Princeton, and will be required to prepare and submit a thesis embodying the results of his summer researches.

The examinations for this fellowship in 1891 will be held in June upon the following subjects:

1. Bryophytes and Characeæ.
2. Anatomy and embryology of Mollusca.
3. Anatomy and embryology of the Teleosts and Selachians.
4. The histology of the nervous system.

PRIZES AND COMPETITIVE SCHOLARSHIPS.

ALEXANDER GUTHRIE McCOSH PRIZE.

The interest of $1,500 will be given annually to that member of the Senior class who shall pass the best examination and write the best essay in Philosophy, including Psychology, Logic, Metaphysics and the History of Philosophy. The subject of the essay will be The Prevailing Types of Philosophy; can they reach Reality logically? It must be handed in on or before June 1, 1891.

THE LYNDE PRIZES.

Three prizes—the income of $5,000, contributed by Charles R. Lynde, Esq.—will be awarded by a committee appointed by the Faculty, to the three successful competitors in a debate on the Tuesday evening preceding Commencement. The competitors are six members of the Senior class—representatives of the Literary Societies—selected by committees appointed by the Societies respectively, from their own members in the Faculty.

THE BAIRD PRIZES.

Through the liberality of Charles O. Baird, Esq., the following prizes, representing the income of $6,000, will be given to those who excel in the oratorical exercises of the Senior class, viz.: The Baird prize of $100, to the best speaker of those who have ranked among the first six writers in any two of the three departments of English Literature, Rhetoric and Oratory; a prize for oratory, of $50, to the best speaker, exclusive of the Baird Prizeman, of those who, in the same departments, have ranked among the first twelve writers; a prize for delivery, of $30, to the best speaker exclusive of the two just mentioned; also, a prize for poetry, of $50; and two prizes of $40 and $30, respectively, for the best and the second best written disputations.

THE CLASS OF 1859 PRIZE.

The interest of $2,000, given by the Class of 1859, will be awarded to that member of the Senior class who shall write the best essay on Walter Savage Landor, and pass the best examination on Shakespeare's *Two Gentlemen of Verona*. The essay must be handed in on or before June 1, and the examination will be held in June. The subject of the essay for the Class of 1892 will be John Ruskin.

THE GEORGE POTTS BIBLE PRIZES.

The yearly interest of $1,000, given in 1867 by Mrs. Sarah A. Brown, expended in the purchase of two copies of Matthew Henry's Commentary on the Bible, will be presented to the two best Biblical scholars of the Senior class at the end of their College course.

THE LYMAN H. ATWATER PRIZE IN POLITICAL SCIENCE.

This prize, being the annual interest on the sum of $1,000, contributed by the Class of 1883, was instituted as a memorial of Rev. Lyman H. Atwater, D.D., LL.D., Professor of Political Science. It will be given to that member of the Senior class who shall be adjudged by the Professors of Political and Social Science to have passed the best examination and written the best essay. The subject for the examination in 1891 will be State Socialism. The subject for the essay will be Pensions and the Public Service. The essay must be ready June 1, 1891; the date of the examination will be announced at that time.

FREDERICK BARNARD WHITE PRIZE IN ARCHITECTURE.

Mrs. Norman White has established in memory of her son, Frederick Barnard White of the class of 1883, a prize in architecture, yielding $50 each year. It is open to the entire Junior and Senior classes and to Special students who take a full schedule of studies. It will be given for the best essay and examination. The subject of the essay for this year is The History of Vaulting. The subject of the examination will be The History of Gothic Architecture. The essay should be presented before June 1, 1891.

THE THEODORE CUYLER PRIZE IN ECONOMICS.

The interest of $1,000, presented by Mr. C. C. Cuyler, of the Class of 1879, will be given to that member of the Senior class who shall present the best thesis and pass the best examination in June, 1891, on some subject in Political Economy, to be assigned by the Professor in charge of the Department of Political Economy.

CLASS OF 1869 PRIZE IN ETHICS.

The annual interest of $3,000, given by the Class of 1869, will be awarded to that member of the Senior class who shall pass the best examination in Ethics and write the best essay. The essay to be presented on or before June 1, 1891. The subject of the essay for the Class of 1891 will be A Criticism of Sidgwick's "Methods of Ethics."

THE C. O. JOLINE PRIZE IN AMERICAN POLITICAL HISTORY.

A prize of fifty dollars, the gift of Mr. Adrian H. Joline of the Class of '70, will be awarded to that member of the Senior class who, at the close of the college year, shall pass the best examination in the political history of the United States during the period 1787 to 1820, and present the best thesis on a topic pertaining to that period, to be assigned by the Professor of History.

THE WOOD SCHOLARSHIP.

The sum of $150, the income of a legacy of Dr. George B. Wood, will be awarded to that member of the Junior class who shall stand highest for the Junior year.

JUNIOR ORATOR MEDALS.

Four gold medals, or books of equal value, will be awarded by a committee appointed by the Board of Trustees, to the four successful competitors in an oratorical contest on the Monday evening before Commencement. The competitors are eight members of the Junior class—four from the Cliosophic and four from the American Whig Societies—selected by committees appointed by the Societies respectively, from their own members in the Faculty.

THE MACLEAN PRIZE.

The Maclean prize, founded by the will of the late Henry A. Stinnecke, consisting of the sum of $100, will be given to that one of the orators chosen by the Literary Societies from the Junior class, who shall on the Monday evening before Commencement pronounce the best English oration.

The committee of judges will be composed of the Professor of Rhetoric and two graduates of the College appointed by the Board of Trustees.

DICKINSON PRIZE.

The Dickinson prize, founded by John Dickinson, Esq., of New Jersey, in 1782, consisting of a medal of the value of $60 (or its equivalent in money), will be awarded to that member of the Junior class who shall write the best dissertation upon The Methods of Dis-

covering Truth in the Various Sciences. The dissertation to be presented on or before June 1, 1891. The subject of the Dissertation for 1892 will be Mill's Theory of Induction.

CLASS OF 1876 MEMORIAL PRIZE FOR DEBATE IN POLITICAL SCIENCE.

This prize is to be given annually by the Class of 1876 to the successful contestant in a debate on a subject of current interest in American politics, to be held on Washington's Birthday, said prize to be the interest of $1,000. The competitors, four in number, one from each class, are to be chosen by a vote of the respective classes.

THE CLASS OF '70 JUNIOR ENGLISH PRIZES.

Of the yearly interest of $1,500, one-half will be given to the best Anglo-Saxon scholar, and one-half, to the best English Literature scholar of the Junior Academic Class.

THE THOMAS B. WANAMAKER ENGLISH LANGUAGE PRIZE.

This prize, the yearly interest of $1,000, will be given to that member of the Junior class who, at the close of the Junior year, shall pass the best examination in Early and Shakesperian English and offer the best thesis on some assigned topic in English Philology.

THE STINNECKE SCHOLARSHIP.

The Stinnecke Foundation was established in 1870 by the will of the late Henry A. Stinnecke, of the Class of 1861, and was supplemented by a bequest received in 1876 from his aunt, Miss Maria Stinnecke. The income is divided between the Stinnecke scholarship of $500 and the Maclean prize of $100.

The Stinnecke scholarship, of the annual value of $500, tenable during the College course, unless forfeited by neglect of study, "will be given to that person who, having entered the Sophomore class, shall pass the best examination at the opening of the session in September, 1893, in the Odes of Horace, the Eclogues of Virgil, and the Latin Grammar and Prosody, as well as the Anabasis or Cyropædia of Xenophon and the Greek Grammar." Students of the College who have been members of the Freshman class, as well as new students entering the Sophomore class, will be admitted to such examination. The committee of examiners is appointed by the Board of Trustees.

THE CLASS OF 1861 PRIZE.

The interest of $1,200, given by the Class of 1861, will be awarded to that member of the Sophomore class who shall pass the best examination in June next on those portions of the mathematical course of the Sophomore year which shall be specially designated by the Professor of Mathematics.

THE FRANCIS BIDDLE SOPHOMORE ESSAY PRIZE.

This prize, the yearly interest of $500, will be given to that member of the Sophomore class, not below the fourth group in his English studies, who in the judgment of a committee appointed by the Faculty, shall write the best English essay of the year.

THE CLASS OF 1870 SOPHOMORE ENGLISH PRIZE.

This prize, the yearly interest of $1,000, will be given to that member of the Sophomore Academic Class who, at the close of the Sophomore year, shall pass the best examination on the English studies of the year.

THE FRESHMAN FIRST HONOR PRIZE.

A prize of $200, part of the income of the J. S. K. Fund, to be paid in quarterly installments during the following year, will be awarded to that member of the Freshman class who, having entered said class at the beginning of the College year, shall, at the end of the year, be reported to the Trustees by the Faculty as having attained the "highest average grade" in scholarship, provided he pursue his studies in this College and maintain a good standing during the Sophomore year. No student who has been suspended from College, or who has been put upon his last probation, shall be eligible to this prize.

SOCIETIES.

Literary Societies.

The Cliosophic and American Whig Societies originated early in the history of the College. They are conducted by the undergraduates, but also include in their organization graduates and officers of the College. Both possess valuable libraries of over 8,000 volumes each. The old halls in which they were accustomed to meet, becoming too small for their accommodation, have been removed, and new and more commodious buildings are being erected near the old sites. In the meantime the societies have secured temporary quarters in the College buildings. They both pursue courses of literary exercises, award numerous prizes for orations, essays and debates, and grant diplomas to their respective graduates.

A generous competition for College honors has always prevailed between them. On the evening before Commencement representatives of the Societies from the Senior class engage in a public debate —on the preceding evening representatives from the Junior class engage in a competition in oratory. The details respecting the Lynde debate and the Junior orations will be found on pp. 130, 132.

The Philadelphian Society.

The Philadelphian Society is an association of undergraduates for the promotion of the religious interests of the College, particularly of the members of the Society. It was founded in 1825. Devotional meetings, usually conducted by members of the Faculty, are held on Thursday evenings, business meetings on Saturday evenings. Murray Hall, the building belonging to the Society, was erected from a bequest left for the purpose by Hamilton Murray of the class of 1872. It contains a hall for public worship and a reading room supplied with religious books and periodicals.

The St. Paul's Society.

The St. Paul's Society is an association similar in nature and aim to the Philadelphian, and is intended to be helpful, devotionally and practically, to those students in the College who have been accustomed to the worship of the Protestant Episcopal Church. It has weekly meetings, conducted by the students, and ordinarily a course of sermons is delivered annually in Trinity Church under its auspices.

BUILDINGS, LABORATORIES, COLLECTIONS.

The College buildings are situated in an elevated and conspicuous portion of the campus, which consists of about two hundred and twenty-five acres. The oldest, and in many respects the most interesting of the buildings, is Nassau Hall, which dates back nearly to the foundation of the College, having been erected in 1756. A portion of the west wing is still occupied by students, the remainder being devoted to the Histological laboratory and the offices of the Curator of the E. M. Museum and of instructors in the department of Biology. The central and eastern portions contain the Geological museums and lecture room, and the Palæontological laboratory. The School of Science building, the Chancellor Green Library, Dickinson Hall, Murray Hall, and a number of other buildings, including the majority of the dormitories, have been erected within the last twenty years. The Marquand Chapel, the gift of Henry G. Marquand, Esq., of New York, was built in 1882. The Academic lectures and recitations are conducted mainly in Dickinson Hall and in the east end of Nassau Hall, while the Scientific lecture rooms and laboratories are at present principally in the building of the John C. Green School of Science and in the new Biological laboratory presented by the class of 1877. The Museum of Historic Art, the central part of which has been completed, will contain the lecture rooms for the courses in Art and Archæology. The special instruction in the department of Electrical Engineering is carried on mainly in the Magnetic Observatory, and the new Chemical building now in process of erection, will, when completed, provide the class rooms and laboratories of the departments of Chemistry and Mineralogy. A new dormitory, the Albert B. Dod Hall, the gift of Mrs. David Brown, of Princeton, is about completed, and through the generosity of the same benefactress, another

building has been contracted for, and is expected to be ready for occupancy next year. Other buildings recently erected or in process of erection are the Dynamo building of the School of Electrical Engineering and the new Halls of the American Whig and the Cliosophic Literary Societies. The students—except by special permission of the Faculty—reside in the College dormitories, the west wing of Nassau Hall, East College, West College, Reunion Hall, Witherspoon Hall, Edwards Hall, University Hall and Albert B. Dod Hall.

THE CHANCELLOR GREEN LIBRARY.

The College library began with the College itself, in a bequest of books by Governor Belcher. The first catalogue, printed in 1760, shows that it then consisted of more than twelve hundred volumes. It suffered much during the Revolution and it was burnt, with Nassau Hall, in 1802. The gifts of many liberal friends soon re-established it, and it slowly advanced to 9,313 volumes in 1854. The want of resources for its increase kept it small, until the Elizabeth fund of $50,000 was created by Mr. John C. Green in 1868. When the present library building was erected by him, in 1872–73, the collection contained about 25,000 volumes. Since that time its progress has been rapid, and it now consists of about 70,000 volumes. The liberality of those who represent his estate has permitted for some years an average yearly increase of 3,000 volumes.

The library is probably strongest in the departments of mathematical, physical, natural and mental science, but it is rich, also, in philology and literature, especially in works on the origin and early history of the English language. Generous efforts have been made to enrich it with the serial issues of scientific associations abroad. Two-thirds of the income of the Library Fund, appropriated to the departments by a committee of the Faculty, is to be expended under the direction of the Professors.

The arrangement of books upon the shelves is by topics. The catalogues are:

1. A printed alphabetical catalogue of subjects, covering the accessions to 1884.

2. A printed bulletin for 1885, 1886, 1887 and 1888.

3. A printed catalogue of the books written by Alumni of the College.

4. An alphabetical card catalogue by authors, reaching to October, 1887.

5. A dictionary (author and subject) card catalogue from 1884 to 1890.

6. A card index to articles in scientific periodicals.

A considerable collection of works of reference is always accessible, and during a part of the day students are, under certain conditions, admitted to the alcoves. Books on topics named by Professors for essays required from the students are counted as books of reference and such books may be borrowed for a night.

At the west end of the building is a reading room for the Faculty, with more than a hundred selected periodicals. Students are admitted on application at the desk, and may borrow back numbers of the periodicals.

Library Hours.

The Library is open on week days during term time from 8:15 A. M. to 5 P. M. In midwinter the want of light shortens the library day.

SEMINARY LIBRARY.

The library of the Princeton Theological Seminary, which contains 52,000 volumes, is open to the students of the College for consultation and loan of books on Monday from 12 M. to 1 P. M., and on every other secular day from 10 A. M. to 1 P. M.

These libraries with the Hall libraries contain about 188,000 volumes.

MUSEUMS.

The E. M. Museum of Geology and Archæology.

This Museum, occupying the central and eastern wings of Nassau Hall, contains collections which are distributed in the three general departments of Geology (including Mineralogy), Palæontology and Archæology. Their arrangement is especially adapted to the purposes of comparative study.

In the GEOLOGICAL DEPARTMENT a special room contains a unique collection of over 5,000 specimens of erratic boulders and drift materials from Switzerland. There is also a special room devoted to the typical rocks and fossils of the State of New Jersey. A collection of the typical rocks of the State of New York represents the series as described in the Geological Survey of that State.

There is in this department a large collection of minerals, containing about 2,600 specimens, bequeathed to the College by the late Archibald MacMartin, of New York. The perfection of the specimens, and the number of localities represented in each family, make this collection one of especial value.

The collections of the PALÆONTOLOGICAL DEPARTMENT fill two large halls, with extensive galleries. The central hall, or Synoptic room, is especially designed and arranged with reference to the general course in Geology. There are mounted casts of the gigantic reptiles and mammals of the secondary, tertiary and quaternary ages. Around these the characteristic fossils of each of the great ages of life form as many groups, which follow each other in chronological order, while within each group the fossils are arranged according to their zoological affinities. The typical fossils selected agree, as far as possible, with those mentioned in Dana's Geology, as characteristic of different geological periods.

The upper or eastern hall contains the main collections for advanced students; on the platform are the skeleton of a Mastodon, an Irish Deer, a Cave Bear, and some of the extinct birds of New Zealand; also the skulls of Uintatherium and a remarkably complete skeleton of Cervalces. Surrounding the room, is a very perfect collection of vertebrate and invertebrate fossils from Europe and America, illustrating the principal organic forms of all the geological epochs. Included in this series are the fine eocene and miocene fossils, procured in the West by the various Princeton collecting parties. There is also a series of fossil insects and plants from Colorado. Altogether the number of fossils, not counting duplicates, is 15,000.

The Museum has received as exchanges a handsome series of fossils from the Museums of Geology at Munich, Paris and London; and through the liberality of Mr. M. T. Pyne, of New York,

an extensive series of fossil vertebrates from St. Gérand le Puy has also been added to the collection. The most important additions of the past year are: (1) An extensive series of mammals and reptiles from the phosphates of Quercy, France; (2) a series of mammals from the John Day and Loup Fork beds of Oregon; (3) a beautiful collection of White River mammals from Dakota and Nebraska obtained by the expedition of 1890.

ARCHÆOLOGICAL DEPARTMENT.—Here are relics of the Swiss lake dwellings, and numerous implements of stone and bronze from Denmark; also several hundred flint instruments from most of the classical localities of the palæolithic and neolithic ages of France.

America is represented in the pottery and human remains of the mound builders, by several hundred specimens of Mexican and Peruvian pottery, and by a number of recent Indian relics. The interesting ethnological collection of objects, chiefly from Alaska and New Mexico, which Dr. Sheldon Jackson presented to the Theological Seminary of Princeton, has been transferred to this Museum by the Trustees of that institution, with the consent of the donor. The Archæological Gallery contains also a series of models of the cliff-ruins of the Southwest, executed under the direction of Dr. Hayden.

Below the eastern hall are the lecture and working rooms.

Biological Collections.

The biological collections have been chiefly made from the endowment fund of the John C. Green School of Science. There have also been many smaller donations to the Museum from time to time. The collections are placed in the large upper hall of the School of Science building, and are at present especially rich in osteological specimens. On the same floor are the laboratory and working rooms of the Curator of the Museum. The collection of vertebrates includes a large number of mounted and disarticulated skeletons of mammals, reptiles, birds and fishes, a series of the birds of New Jersey and of other districts of North America, carefully mounted, and alcoholic specimens. A feature of the ornithological collection is the very large number of unmounted bird skins, arranged for the purpose of comparative study of the plumage, beak

and feet. Among the invertebrates are a series of ascidians, echinoderms, molluscs, crustaceans, insects, worms, corals, sponges, and microscopic preparations of small forms. The whole collection has also been catalogued and numbered. Students may apply to the Curator for access to the catalogue and cases containing the skeletons.

The Herbarium is on the second floor of the School of Science building, and is arranged as a museum of the botanical collections, also as a working laboratory for students. The plants are classified according to Bentham and Hooker's *Genera Plantarum*, and include specimens from the different sections of the United States, and from South America, Europe and Australia. There are extra specimens for laboratory use, and dissecting and compound microscopes, anatomical instruments, section cutters, models, diagrams and books of reference.

The Museum of Historic Art.

The central portion of the new Museum has been completed, with the exception of the internal finish of the upper story. The Trumbull-Prime collection of pottery and porcelain, as well as several smaller collections of antiquities, have been received and are being arranged. During the past year the Museum has received the following gifts: from the Class of 1881, a collection of casts of Ancient and Mediæval Sculpture; from other sources, cases for the Prime collection, the Arundel Society casts of ivory carvings, a collection of Etruscan vases and Archaic Greek antefixes.

Mathematical Models.

In the Graphics room of the School of Science may be found the Brill plaster models of higher algebraic surfaces; a set of duplicates of the more important Olivier models of ruled surfaces; the Björling developable surface models, a number of the Muret set and the Schröder mathematical models.

LABORATORIES AND APPARATUS.

Physical Laboratory and Apparatus.

The physical laboratory is fitted up with tables and other arrangements to accommodate about twenty students at once. Besides the appliances usually employed in lecture demonstrations, the cabinet of apparatus contains all the instruments of precision required by the experimental courses.

The following deserve special mention:—A fine balance by Becker, sensitive to one milligramme under a load of twenty kilogrammes. A short beam balance. A cathetometer (Grunow), with scale of one metre. A dividing engine and comparator (Rogers). A cylinder chronograph, for all time observations in the laboratory, in electrical communication with the standard clock of the astronomical observatory. A diapason chronograph (Koenig), for minute intervals of time. A spectrometer (Fauth) with 18-inch circle, reading by microscope to single seconds. Ditto (Grunow), with smaller circle, reading to 10″. A number of diffraction gratings (Rutherford and Rowland). A large spectroscope, with dispersive power of twelve prisms (Browning). Sir William Thomson's absolute, quadrant and portable electrometers (White). Two of Sir William Thomson's ampere-balances. Lippmann's capillary electrometer. Sets of accurate resistance coils, and standard condensers. A large number of galvanometers suited to the different requirements of the laboratory. Sets of standard thermometers; apparatus for calorimetric inquiries; photometers, etc.

Buildings and Apparatus of the School of Electrical Engineering.

The magnetic observatory is a brick building without iron in its construction, situated on Washington street, in a position in which it is, as far as possible, free from the disturbing influences of large masses of iron. The main laboratory is in the basement. On the first floor are a reading room and a private laboratory, and on the second floor is a large room, which is used for special investigations. Among the instruments in the laboratory which deserve

special mention are: a large physical balance, Thomson's quadrant electrometer, Thomson's electrostatic electrometer, specially constructed galvanometers by Edelmann, Hartmann, and Elliott, Thomson's ampere balances, two large resistance boxes, adjusted by Anthony. Besides these, there is a full outfit of galvanometers, voltmeters, ammeters and all other instruments needed either in technical work or in exact investigation.

The dynamo building stands on the corner of Washington and William streets. It is connected with the School of Science building. The motive power for the machinery is furnished by a sixty horse-power boiler and a Ball engine. The dynamo plant, at present, consists of a Westinghouse alternate current machine with full set of transformers, a Mather, an Edison, a Brush arc, an Eichemeyer, a Gramme, a machine constructed in the workshop of the School of Science, Brush and Eichemeyer motors. With these machines is a complete outfit of accessories, and a large rheostat of German silver used in testing the machines and for measurements. Arc and incandescent lights are so arranged that the various systems of distribution may be studied.

The dynamo building is connected with the magnetic observatory by heavy copper wires, so that the instruments of the observatory are available for experimental work with the dynamos. Four sets of storage batteries are also connected with the plant.

Chemical Laboratories.

The laboratory and cabinets of the department of General Chemistry are fully equipped for the illustration of the courses in the two branches of general and applied chemistry.

There is a large laboratory for the department of Analytical Chemistry, and connected with this are the Professor's and Assistant's rooms, acid room, weighing room and store room, provided with the best appliances. There is also an assay laboratory, with crucible and muffle furnaces. These laboratories are all in the School of Science building, and each student has a desk for his own use, with cupboards and drawers in which he can lock up such apparatus as is supplied to him individually.

A new building was begun this summer and will probably be finished within a year, which will greatly increase the facilities for instruction in chemistry. The building will be fire-proof and will be devoted entirely to the various departments of chemistry and mineralogy. It will contain two laboratories for undergraduate students in chemical analysis, besides lecture rooms, private laboratories, assay laboratory, reading room, laboratory for advanced students, laboratory for gas analysis, cloak room, store rooms and janitor's room, and will accommodate more than three times as many students as the laboratory now in use.

Mineralogical Laboratory and Collection of the School of Science.

The laboratory contains desk room for fifty students. Each desk is fitted with gas connections for blowpipe work in determinative mineralogy, and contains a locked drawer for the student's apparatus.

There are three cabinets of minerals. The principal one contains over five thousand specimens, embracing nearly every mineral species. Two smaller cabinets, one with labeled and the other with unlabeled minerals, are provided for practice with the classes, and to these two cabinets the students have free access.

There is also a collection of 240 specimens of typical rocks; together with a large number of Fuess's rock sections, as well as sections from other sources, for the study of lithology.

The laboratory is provided also with section cutters, grinding lathes, and other appliances for the special study of minerals and rocks; including a complete Groth's polarizing apparatus with goniometer, a large Babinet goniometer, Norremberg's polarizing apparatus, Rosenbusch's microscope, and minor apparatus.

Histological Laboratory.

This laboratory is situated on the upper floor of the west wing of Nassau Hall. It is fitted to accommodate twenty-two students at a time, each of whom is provided with the requisite instruments, reagents and staining fluids for the study of the various tissues. The

microscopes have been selected with a view to convenience in practical work. A large private collection of slides, illustrating the general subject of histology, is also placed at the disposal of the students, as well as books of reference and American and foreign publications. The laboratory is open at all hours to its regular students.

The Class of 1877 Biological Laboratory.

This building is situated at the east end of Dickinson Hall. It was presented to the College by the Alumni of the Class of 1877 at their decennial reunion. It is designed for the advanced practical and experimental courses in comparative anatomy, embryology, and physiological psychology. The main morphological laboratory, upon the second floor, is equipped for the instruction of undergraduate students, with a private room and special library of reference books adjoining. The first floor comprises the embryological laboratory, intended for the use of University students engaged in research, and is in charge of the Class of 1877 Fellow in Biology; also the bacteriological laboratory for instruction and experimental work in bacteriology. The basement is designed for aquaria. The laboratory is open to students during the day from 8 A. M. to 6 P. M., and in the evening, subject to special regulations.

The Palæontological Laboratory.

This laboratory has been fitted up during the past year to provide for practical instruction in the courses in palæontology. Each student has a table with drawers, etc., for his own use, where the study of fossil forms can be conveniently carried on. The very extensive collections of the geological museum furnish ample material for the general courses in palæontology, stratigraphy, as well as for the purposes of research. A series of diagrams, maps and models is provided, as are also microscopes and prepared slides for the examination of the minute structure of various extinct forms, both animal and vegetable.

For advanced students engaged in original investigations, there are private rooms available.

ASTRONOMICAL OBSERVATORIES.

The Halsted Observatory.

This is appropriated to scientific work, chiefly in the department of astronomical physics. The building is of stone, with an iron dome thirty-nine feet in diameter, the power for moving it and its sliding shutter being furnished by an electric motor and storage battery. The principal instrument is the great equatorial, of twenty-three inches aperture and thirty feet focal-length, made by the Clarks of Cambridge. It is provided with all the usual micrometers, spectroscopes and other accessories, on a scale proportional to the instrument. The building also contains a clock and a chronograph, and is in electric connection with the Observatory of Instruction.

The Observatory of Instruction.

This establishment is devoted entirely to the use of students, and is fully equipped for its purpose. It posesses an equatorial (by Clark) of 9½ inches aperture, with a full complement of spectroscopic and other accessories. It has also a 9-inch reflector; a meridian circle with telescope 4 inches in diameter; two transit instruments with 3-inch telescopes, both of them arranged for use as zenith telescopes; a 3-inch prime-vertical instrument; a chronograph; two standard clocks, and two chronometers. There are also a number of sextants, and all the other subsidiary apparatus required for carrying out the work detailed on page 48.

GYMNASIUM.

The gymnasium was built in 1869 by Mr. Robert Bonner and Mr. Henry G. Marquand. It contains, besides the main hall with the apparatus for physical training, hot and cold shower and plunge baths, dressing rooms, bowling alleys, and a gallery for visitors. The gymnasium is open daily from 10 A. M. to 7 P. M. throughout the year. During the first term three exercises a week are required of all members of the Freshman class. From November

to April, general class exercises are held daily at noon and also at 5 P. M. on Mondays, Tuesdays, Wednesdays and Thursdays. These exercises are adapted to all grades of strength and are such as to maintain and improve in health all who take part in them.

Special training on the various apparatus is given under the personal supervision of the superintendent. From April to the close of the year, advanced exercises are taught to those desiring to take part in them, and at Commencement there is a gymnastic exhibition. During the year there are four athletic meetings for prizes.

The University Athletic Grounds.

This field is spacious, complete in its appointments and less than a quarter of a mile from the College. There is room on the turfed portion for two games simultaneously of either base-ball or foot-ball. The cinder track is about half a mile long, with carefully calculated curves. Within the enclosure are: 1. A large winter practice house, built of brick, with a clear floor space of 60 by 140 feet; 2. A club house containing the necessary dressing rooms; 3. A very fine grand stand with a seating capacity of 750 and a tower clock in one of its gables.

GENERAL COLLEGE ORDERS.

TERMS AND VACATIONS.

The year is divided into two terms of eighteen weeks each.

The first term of the present College year (1890–91) began on Wednesday, the 17th of September, 1890, and ends on Wednesday, the 4th of February, 1891. The second term begins on Thursday, the 5th of February, 1891, and ends on Wednesday, the 10th of June, 1891, the day of the Annual Commencement.

Students are required to return to College on the first day of each term, and absence from any College exercise at the beginning of a term counts double.

Students are not allowed to leave College during term-time without express permission obtained from the Faculty or from the officer of the class to which they belong.

COMMENCEMENT EXERCISES.

THE ANNUAL COMMENCEMENT takes place on the Wednesday preceding the last Wednesday but one in June.

THE BACCALAUREATE SERMON of the President to the graduating class is delivered in the College Chapel on the Sunday preceding Commencement.

The Class Day exercises of the graduating class, and the Junior oratorical contest are held on Monday preceding Commencement. The reading of theses by the graduating class of the School of Science, the annual meetings of the Literary Societies, the annual meeting of the Alumni Association of Nassau Hall, and the Lynde prize debate are held on Tuesday.

PUBLIC WORSHIP.

Prayers are offered in the Marquand chapel every week-day morning.

Divine service, under the superintendence of the President, is held in the Marquand chapel, on Sunday, at 11 o'clock A. M.

The service is conducted, alternately, by the Dean and some one of the clerical members of the Faculty.

Religious services are held in the chapel every Sunday afternoon at five o'clock.

Permission to attend divine service elsewhere than in the chapel, on special occasions, is granted on application to the President. For permission to attend regularly one of the churches of the town on Sunday morning, a written request from the parent or guardian of the applicant must be presented to the President.

RELIGIOUS INSTRUCTION.

Biblical instruction is given during the week, as follows:

To the Senior class by the President: The epistles of St. Paul.

To the Junior class by the Dean: The development of doctrine in the Gospels.

To the Sophomore Academic class by Professor Orris: St. John's Gospel in Greek.

To the Freshman Academic Class by Professor Hunt and Dr. Richardson: General introduction to the study of the Scriptures, the Poetical Books of the Old Testament, the Parables of Our Lord.

To the Sophomore class in the School of Science by Professor Willson: Topical studies in the New Testament.

To the Freshman class in the School of Science by Professor Macloskie: Typology of the Old Testament and the Life of Christ.

ATTENDANCE UPON COLLEGE EXERCISES.

The several classes ordinarily attend three recitations or lectures every day, except Saturday, when there are but two College exercises.

Every undergraduate student is required to attend all College exercises in the chapel, to be present during the lectures and recitations of his class, and is expected to avail himself of the privileges of the library and gymnasium upon the conditions and at the hours appointed.

Each student is allowed a certain limited number of absences from chapel and recitations during the term. When a student's absences exceed this gratuity they are charged against his gratuity for the next term, or otherwise dealt with by such discipline as the Faculty may direct.

CHARITABLE FUNDS.

THE RICHARDS FUND.—A bequest by Mrs. Esther Richards, of New York, amounting to $2,970.32, for the benefit of candidates for the ministry. Received in 1790.

THE LESLIE FUND.—A bequest of James Leslie, of New York, a graduate of the class of 1759, amounting to $10,677.49, for "the education of poor and pious youth with a view to the ministry of the Gospel in the Presbyterian Church." Received in 1792.

THE HODGE FUND.—A bequest of Hugh Hodge, of Philadelphia, of a house and lot on Market street, above Second (No. 205), "to be held by the Trustees in trust, to lease out from time to time, and the rents to be applied to the support and education of pious youth for the ministry." Received in 1805. The net income for the current year will amount to about $750.

THE VANARSDALE FUND.—A bequest of Robert VanArsdale, of Newark, N. J., of the class of 1826, amounting to $3,000, "in trust for promoting charitable instruction in the College of New Jersey, according to the discretion of the Faculty." Received in 1875.

ENDOWED SCHOLARSHIPS.

1–3. The COLT Scholarships, founded by Roswell Colt, of Paterson, N. J.,	$3000
4. The NEWKIRK Scholarship, founded by Matthew Newkirk, of Philadelphia,	1000
5. The JOHN JOSEPH RANKIN Memorial Scholarship, founded by his father, Wm. Rankin, of Newark, N. J.,	1000
6. The CRESSWELL Scholarship, founded by A. Cresswell, of Kishacoquillas, Pa.,	1000
7. The ISAAC R. RANKIN Scholarship, founded by Isaac R. Rankin, of Newark, N. J.,	1000
8. The MUSGRAVE Scholarship, founded by Rev. George W. Musgrave, D.D.,	1000
9. The COGSWELL Scholarship, founded by Rev. Jonathan Cogswell, D.D.,	1000
10. The GREEN Scholarship, founded by Hon. Henry W. Green, LL.D.,	1000
11–15. The LENOX Scholarships, founded by James Lenox, of New York,	5000
16. The HODGE Scholarship, founded by Dr. Hugh L. Hodge, of Philadelphia,	1000

17. The A. B. BAYLISS Scholarship,
founded by A. B. Bayliss, of Brooklyn, 1000
18. The HENRY J. VAN DYKE Scholarship,
founded by George L. Sampson, of Brooklyn, 1000
19. The GREGORY Scholarship,
founded by Dudley S. Gregory, of Jersey City, 1000
20. The FIRST PRESBYTERIAN CHURCH OF PEEKSKILL
Scholarship, founded by members of the Church, 1000
21. The VAN VORST Scholarship,
founded by Hon. John Van Vorst, of Jersey City, 1000
22. The JANEWAY Scholarship,
founded by the Rev. Jacob J. Janeway, D.D., 1000
23. The PRESBYTERIAN CHURCH OF HUNTINGTON, L. I.,
Scholarship, founded by the ladies of the Church, 1000
24. The BACKUS Scholarship,
founded by E. F. Backus, of Philadelphia, 1000
25. The VAN SINDEREN Memorial Scholarship,
founded by Mrs. and Miss Van Sinderen, of Brooklyn, 1000
26. The NORRIS HALSTED Scholarship,
founded by Gen. N. Norris Halsted, of Newark, N. J., 1000
27. The MACLEAN Scholarship,
founded by Drs. John and George M. Maclean, 1000
28. The HAINES Scholarship,
founded by Richard T. Haines, of Elizabeth, N. J., 1000
29. The JACKSON Scholarship,
founded by Hon. John P. Jackson, of Newark, N. J., 1000
30. The TUTTLE Scholarship,
founded by Joseph N. Tuttle, of Newark, N. J., 1000
31. The GERTRUDE N. WOODHULL Memorial Scholarship,
founded by her son, Dr. John N. Woodhull, of Princeton, 1000
32. The NATHANIEL W. TOWNSEND Memorial Scholarship,
founded by his daughter, Mrs. Daniel Haines, 1000
33. The FIRST PRESBYTERIAN CHURCH OF BRIDGETON
Scholarship, founded by members of the Church, 1000
34. The SKIDMORE Scholarship,
founded by Joseph P. Skidmore, of New York, 1000
35. The SPENCER Scholarship,
founded by L. S. Spencer, 1000
36. The JEREMIAH D. LALOR Memorial Scholarship,
founded by a friend, 1000
37. The MARQUAND Scholarship,
founded by Frederick Marquand, of Southport, Conn., 1000
38. The FIRST PRESBYTERIAN CHURCH OF TRENTON
Scholarship, founded by members of the Church, 1000
39. The CAMERON Scholarship,
founded by Hons. Simon and Donald Cameron, 1000
40. The SECOND PRESBYTERIAN CHURCH OF ELIZABETH
Scholarship, founded by members of the Church, 1000

41. The C. S. Bayliss Scholarship,
founded by Charles S. Bayliss, of Brooklyn, 1000
42. The Eliza Musgrave Giger Memorial Scholarship,
founded by her son, Prof. George M. Giger, D.D., 1000
43. The Blair Scholarship,
founded by James Blair, of Scranton, Pa., 1000
44. The Pennington Scholarship,
founded by Dr. Samuel H. Pennington, of Newark, N. J., 1000
45. The Fenton Scholarship,
founded by Aaron Fenton, 1000
46. The Trask Scholarship,
founded by Alanson Trask, of Brooklyn, 1000
47. The Withington Scholarship,
founded by Chandler Withington, of Kingston, N. J., 1000
48. The Newark Scholarship,
founded by the will of Henry Rogers, of Newark, N. J., 1000
49. The Carter Scholarship,
founded by Aaron Carter, of Newark, N. J., 1000
50–54. The Holmes Scholarships,
founded by Capt. Silas Holmes, of New York, 5000
55. The Colwell Scholarship,
founded by Stephen Colwell, of Philadelphia, 1000
56. The Aitken Scholarship,
founded by John Aitken, of New York, 1000
57. The Bullard Scholarship,
founded by Mrs. P. Bullard, 1000
58. The Charles Dickinson Hamill Memorial Scholarship,
founded by his father, the Rev. Samuel M. Hamill, D.D., 1000
59. The Cyrenius Beers Memorial Scholarship,
founded by his daughter, Miss Julia Beers, 1000
60. The Jacobus Scholarship,
founded by Peter Jacobus, of Newark, N. J., 1000
61. The Matthew B. Hope Scholarship,
founded by the Trustees as an acknowledgment of the services of Prof. Hope in raising an endowment of over $100,000, 1000
62. The John Maclean Scholarship,
founded by a friend of President Maclean, 1000
63. The White Scholarship,
founded by William White, Esq., 1000
64. The Elizabeth Van Cleve Scholarship,
founded by the Hon. C. S. Green, of Trenton, N. J., 2000
65. The Bloomfield Scholarship.
founded by the Hon. Amzi Dodd, of Bloomfield, N. J., 1000
66. The Flagler Scholarship Fund,
the gift of Henry M. Flagler, of New York City, 1500
67. The James McCosh Scholarship,
founded by friends of President McCosh in N. Y. City, 1000

68–69. The WISTAR MORRIS WOOD and CHARLES MORRIS WOOD Scholarships, founded by their father, the Rev. Charles Wood, D.D., of Germantown, Pa., 2000
70. The CLASS OF 1856 Scholarship, founded by members of the class of 1856, 1000
71. The CLASS OF 1841 Scholarship, founded by members of the Class of 1841, 1000
72. The ALBERT DOD BROWN Memorial Scholarship, founded by his mother, Mrs. Susan D. Brown, of Princeton, N. J., 1000
73–82. The JONATHAN DICKINSON Scholarship,
The AARON BURR Scholarship,
The JONATHAN EDWARDS Scholarship,
The SAMUEL DAVIES Scholarship,
The SAMUEL FINLEY Scholarship,
The JOHN WITHERSPOON Scholarship,
The SAMUEL STANHOPE SMITH Scholarship,
The ASHBEL GREEN Scholarship,
The JAMES CARNAHAN Scholarship,
The FRANCIS L. PATTON Scholarship,
83–87. The KENNEDY Scholarships, founded by Miss Rachel L. Kennedy of New York, 15,000
88. The A. O. HEADLEY Scholarship, founded by A. O. Headley, Esq., of Newark, N. J., 1000
89. The HARVEY LINDSLEY Memorial Scholarship, founded by Mrs. Emeline Coney Lindsley, 1000
90. The CHESTER COUNTY, PA., Scholarship, founded by the Alumni Association of Chester Co., Pa., 1000

The above scholarships are for the benefit of students in the Academic Department, with the exception of the ELIZABETH VAN CLEVE Scholarship, which may be assigned to a student in the School of Science.

About sixty scholarships were founded between the years 1853 and 1858, mainly through the efforts of President Maclean and Professor Hope. The last twenty-seven were founded since the beginning of the Academic year 1885–6.

PECUNIARY AID.

The College has for many years remitted, on application, the tuition in the Academic Department of candidates for the ministry, of sons of ministers, and also of other applicants who present satisfactory testimonials of good moral character and of more than ordinary intellectual ability with the assurance that the aid requested is absolutely needed. No candidate for admission to the Academic Department who is unexceptionable morally and intel-

lectually will be refused admission because of inability to pay the charge for tuition.

In consequence of this liberal policy the amount of tuition remitted has increased until it is now more than double the entire income from the scholarship and charitable funds. If this policy is to be continued a large increase of these funds is urgently demanded. The Trustees have accordingly appointed a joint committee of members of the Board of Trustees and of the Faculty, to increase the Scholarship Fund to $150,000. *This effort is commended to the attention and favor of the Alumni and other friends of the College.*

Although the charge for tuition since the first scholarships were founded has been advanced from $60 to $100, scholarships in the Academic department for the benefit of *candidates for the ministry, sons of ministers, or other students needing assistance*, may be founded by the payment of $1000—the scholarship to be designated as the donor may direct.

Scholarships may be founded by the payment of $1,000 and designated as the donor may direct, the income from which will be accepted as payment of the tuition in the Academic department of *any student* to whom the donor may assign it, for *four years*—to be subsequently assignable by the Faculty.

Application for scholarships or for aid from the charitable funds should be made to Professor Duffield.

EXPENSES.

The following is the Schedule of the College expenses for 1890–1891.

Board, 36 weeks	$ 3.00 to $7 per week.
Washing, 36 weeks	50 cents per week.
Tuition, Academic	100.00 per annum.
Tuition, School of Science	120.00 per annum.
Tuition, Special course in Analytical Chemistry	120.00 per annum.
Tuition, extra for Laboratory Chemistry, Senior elective	18.00 per annum.
Room rent (according to location of rooms)	30.00 to $175 per annum.
Fuel deposit (according to location of rooms)	17.00 to $28 per annum.
Gas deposit (according to location of rooms)	24.00 to $42 per annum.
Servants and Public Rooms (Library, Gymnasium, Museums, etc.)	40.00 per annum.
Matriculation Fee, payable on entrance	5.00
Graduation Fee, payable second term, Senior year	12.00

For other special courses than that in Analytical Chemistry arrangements may be made upon consultation with the Professor in charge.

The charges for fuel and gas are approximations based upon the greatest amount used. An account of the actual consumption is kept with each room, and the exact charge is adjusted at the end of the year. The charge for fuel includes the cost of kindling, and the labor of carrying coal, making fires, etc.

Apparatus Deposits.—Students pursuing certain courses in the School of Science are required to make deposits to pay for apparatus injured or destroyed. At the end of the term any excess in favor of the student is placed to his credit on the bill for the next session. The deposits in the courses for B.S. are:—Sophomores, first term, $12; second term, $12; Juniors taking any work in chemical analysis, second term, $12; Seniors electing the course in Chemistry and Mineralogy, first term, $15; second term, $10; other Seniors taking any work in chemical analysis, first term, $12. The deposits in the course for C.E., all payable in the first term, are:—Freshmen, $3; Juniors, $6; Seniors, $4; all of the foregoing being for apparatus in the Engineering Department; also, Sophomores, $5 for the Engineering Department, and $12 for blowpipe apparatus. Academic Seniors, electing Laboratory Chemistry, will deposit $5, payable in the first term.

Students taking any of the courses in Graphics will require a drafting outfit costing from $18 to $25.

ESTIMATES OF ANNUAL EXPENSES.

ACADEMIC DEPARTMENT.

Attention is specially called to the following approximate estimate of the necessary annual expenses for a student occupying an unfurnished room in College, without including clothes, traveling or vacation expenses:

	Min.	Medium.	Max.
Board, 36 weeks, at $3.00 to $7.00	$108.00	$180.00	$252.00
Washing, 36 weeks, at 50 cents per week	18.00	18.00	18.00
Tuition and Public Room Fees	140.00	140.00	140.00
Matriculation Fee (on Entrance)	5.00	5.00	5.00
Room Rent	30.00	60.00	175.00
Fuel	10.00	20.00	30.00
Gas		10.00	25.00
Total	$311.00	$433.00	$645.00
Deduct for Students on Scholarships (See page 156.)	100.00		
	$211.00		
Approved Candidates for Ministry	30.00		
	$181.00		

College Bills.

All College expenses, including board and washing, must be paid in advance to the Treasurer of the College.

Students are required to call at the Treasurer's office in the course of the first ten days of each session, and to give information as to their place of boarding, etc., so that their bills can be made out. All bills must be paid within the first four weeks of the session. Failure to comply with this rule will deprive the student of the privileges of the College until payment is made, unless excused by special vote of the Faculty.

When a student enters College before the middle of the session, he shall pay in full the usual College charges for that session, with the exception of the charges for board and washing; if he enter after the middle of the session, he shall pay one-half. For board and washing he shall pay in proportion to the time.

When a student leaves the College, whether voluntarily or by dismission, before the middle of any session, one-half of the charges for tuition and public rooms for that session shall be refunded. But in the case of temporary absence and subsequent return, although the absence be for more than half a session, no such rebate shall be granted.

When a student is dismissed from College for any cause, the advance deposit for board, washing, fuel and gas, beyond the time of his dismission, shall be refunded to his parent or guardian.

When at the end of the first session the amount of the advance deposit proves to be in excess of the sum required to defray the board, washing or room bills of any student, the excess shall be credited on his bill for the next session. At the end of the College year the amounts overpaid by the members of the *graduating class* for board, washing, room rent, fuel, or gas shall be refunded by the Treasurer to the student's parent or guardian. The parent or guardian of *every undergraduate* will be advised of the amount of excess to the credit of his son or ward, and such amount will be *carried over to his credit on the bill of the first session of the following year.* In case of withdrawal or dismissal from College of any undergraduate, at the end of the college year such excess will be refunded by the Treasurer to the parent or guardian, when informed by the Clerk

of the Faculty that such undergraduate has been withdrawn or dismissed from College.

RULES RESPECTING RENTAL AND ALLOTMENT OF ROOMS.

(*a*) Exchange of rooms can be made only by students occupying College rooms. (See rule 12.)

(*b*) Buying furniture does not give purchaser a right to a room. (See rule 14.)

(*c*) Furniture in a room can be bought or sold—not the room. (See rule 14.)

(*d*) Exchanges are not transfers, and no transfers are allowed. (See rule 13.)

(*e*) Students who room in town and purchase furniture in College rooms cannot have the rooms transferred directly to them—the rooms must go through "drawing." (See rule 14.)

1. Whenever a student desires to occupy a room in one of the College buildings, he and his parent or guardian shall be required to sign a room-agreement, engaging to pay the rent and charges of said room for the ensuing Academic year, or for the remainder of the current year, as the case may be.

2. The tenure of all rooms so engaged shall be subject to the following conditions as regards damages and repairs, viz.: (1.) All damage done to a room beyond the ordinary wear and tear, shall be made good as soon as possible at the expense of the occupant. *This provision includes the breakage of glass whether by accident or design.* The occupant shall employ the proper College workmen and pay the cost of the repairs at once to the Treasurer. (2.) The occupants of a room shall deposit with the Curator the sum of twenty-five cents for every key furnished, which amount shall be refunded on return of the keys.

3. Students now occupying rooms, or to whom rooms shall hereafter be allotted, may have the option of retaining such rooms until the end of their College course, on condition of annually notifying the Treasurer of their intention of retaining their rooms for the following year, and signing a new room-agreement before

May 7th; otherwise their rooms will be considered as vacated, and will be included in the annual allotment.

4. In the annual room-drawing, rooms shall be drawn only by the *bona fide* intending occupant. In case of absence through sickness, of any such intending occupant, a proxy duly authorized, in writing, may act in his stead. The student so drawing a room, either in person or by proxy, will be held for the rent of such room for the entire ensuing year unless released by the proper authority.

5. Rooms becoming vacant at or near the close of the College year shall be assigned to new occupants, by lot. The members of the Junior and Sophomore classes who desire a choice shall draw lots first; then, the Freshmen. As soon as the drawing is completed the rooms must at once be selected in order of priority of choice.

6. No student will be entitled to the room allotted him unless the room-agreement shall have been signed and returned to the Treasurer before June 5th.

7. New students shall have the choice of any remaining rooms in the order of their application, after admission into College, on condition of immediately signing the room-agreement, and depositing with the Treasurer the rent for the next ensuing term.

8. Every student who draws or retains a room is expected to occupy the same, and pay the rent and charges, or his share thereof, until the end of the College year, unless sooner released by the proper authority.

9. A student who expects to be absent on leave for a term may be released from the above obligation, by notifying the Treasurer before the beginning of the term, and by giving up the room; but no abatement or drawback for room rent will be made to any student vacating his room during a term, unless by express direction of the Faculty.

10. Whenever, by any contingency, one of two room-mates is permitted or obliged to cancel his room-agreement, the remaining occupant must vacate the room at the end of the current term, unless he agrees to pay the whole rent, or provides a room-mate who shall join him in signing a new agreement for the remainder of the College year. When one of two occupants of a room is a member of the

Senior class, the room shall become vacant when the Senior graduates, and be subject to the provisions of Rule 5, except in cases where the joint occupancy has continued for at least one year.

11. When rooms are vacated during the first term the rent shall be paid to the end of the term (see Rule 9), at which time the students who may have registered their names as applicants for vacancies shall draw for them by lot.

12. Exchange of rooms, or substitution of one occupant for another, must be by authority of the Treasurer, and any student moving into a room, without authority previously obtained, will be liable to a fine of $10, and be required to vacate the room. Such exchanges can only be made at the end of the first term, or the first three days of the second term.

13. When a Senior and an underclassman desiring to exchange rooms shall have observed all the regulations respecting such changes, if satisfactory to the underclassman and his parent or guardian, the Senior may be allowed to retain his room until the end of the College year, provided the parent or guardian of such underclassman shall have signified his assent in writing to the Treasurer.

14. No tenant of a College room who is permitted or compelled to vacate such room will be allowed to transfer directly or indirectly any interest in or title to the room.

15. When a student vacates a room he shall immediately remove the furniture therefrom unless the student to whom the room is assigned elects to purchase the same. In case a sale is agreed upon between the parties, the price to be paid by the purchaser shall be ascertained by deducting from the cost price of the furniture a discount of twenty per cent. per annum for the time the same has been in use by the vendor; provided that the price to be paid for the furniture in a room shall in no case exceed $200. All sales shall be approved by the Treasurer before the same are finally consummated.

16. Students leaving College, or otherwise vacating their rooms, shall be allowed to store their furniture in a room assigned by the College authorities, under the charge of a salesman appointed by the College, where it may be offered for sale. Furniture remaining unsold at the end of three months, if not removed by the owner, will be disposed of at public auction to the highest bidder.

STUDENTS OF THE COLLEGE.

RESIDENT GRADUATE STUDENTS.

N.B.—Fellows are not included in the following list. (Vide p. 19.)

Eugene McClellan Armstrong, (*W*)	New York,	61 B H
William Crittenden Axer,	Maryland,	7 B H
William Barr, A.B., (*We*)	Pennsylvania,	42 B H
William Ezra Bates, A.B., (*L F*)	Nebraska,	44 B H
George Titus Berry, A.M., (*P*)	New Jersey,	19 B H
Paul Frederic Gabriel Bettex, A.B., (*CF*)	New Jersey,	16 B H
Frank Fenton Blessing, A.B., (*U*)	New York,	43 B H
Robert Bradley, Jr., A.B., (*S C*)	South Carolina,	29 B H
John Milton Brooks, A.B., (*P*)	Ohio,	7 Edwards Pl.
Thomas Brown, Jr., A.B., (*P*)	New Jersey,	88 Nassau St.
James Wills Campbell, A.B., (*Wo*)	Ohio,	24 O S
Stuart McAlpine Campbell, A.B., (*K*)	Illinois,	89 Mercer St.
George Wheeler Clark, A.B., (*W*)	New York,	3 B H
Addison Berg Collins, A.B., (*P*)	Pennsylvania,	44 O S
James Dennison Corwin, B.L., (*A*)	Ohio,	39 O S
Abraham Parker Denney, A.M., (*Li*)	New Jersey,	13 Green St.
William Dewar, A.B., (*T*)	Ontario,	5 O S
George Vernon Dickey, A.B., (*Ps*)	Iowa,	9 B H
Freeman Dixon, (*B C*)	Maryland,	52 B H
Charles Earle, (*P*)	New York,	60 Univ. Pl.
Joseph Nichol Elliott, A.B., (*T*)	New Jersey,	108 Mercer St.
Carl George Hans Ettlich, (*N Y*)	New Jersey,	29 Canal St.
William Jamison Fitz-Simons, (*B*)	Ireland,	13 O S
Thomas Robertson Fretz, A.B., (*L*)	Pennsylvania,	18 B H
Benjamin McKee Gemmill, A.B., (*L*)	Pennsylvania,	41 B H
Robert Isaacs Gammon, A.B., (*U P*)	Pennsylvania,	74 B H

Alexander Gilmore, (*Br*) Australia, 72 B H
James MacMillan Hamill, A.B., (*Q*) Ireland, 6 O S
Harry Walter Haring, A.B., (*P*) Pennsylvania, 44 O S
George McLean Harper, A.B., (*P*) New Jersey, 8 S E
Wilbur LaFayette Hays, A.B., (*Bl*) Illinois, 64 B H
Walter Alexander Hitchcock, A.B., (*J*) Maryland, 36 O S
David Howell, M.S., (*M Ag*) Michigan, 24 Dickinson St.
William Henry Humphrey, A.B., (*M*) Wisconsin, 6 B H
Matthew James Hyndman, A.B., (*UP*) Pennsylvania, 21 Dickinson St.
Robert Scott Inglis, A.B., (*W J*) Pennsylvania, 46 O S
Frederick Wolcott Jackson, Jr., C.E., (*P*) New Jersey, 43 O S
Clarke Alexander Jennings, A.B., (*Pr*) South Carolina, 29 B H
Herman Samuel Juistema, A.B. (*Ho*) Michigan, 36 O S
William Deas Kerswill, A.B., (*T*) Ontario, 5 O S
George Sloman Ketchum, (*UP*) Pennsylvania, 67 B H
Samuel Killen, New Jersey, 12 O S
Harry Kremers, A.B., (*Ho*) Michigan, 27 B H
William Porter Lee, A.B., (*M*) Pennsylvania, 17 B H
Dean Richmond Leland, A.B., (*Ha*) New York, 37 O S
Louis August Lindemuth, A.B., (*W V*) West Virginia, 69 B H
Frank Lukens, A.B., (*P*) New Jersey, 11 S A D H
French McAfee, (*H*) Pennsylvania, 62 B H
Archibald Hugh McArn, A.B., (*Dav*) North Carolina, 75 B H
Robert Irwin MacBride, A.B., (*N Y*) New York, 58 B H
John Irenæus McCain, A.B., (*E*) South Carolina, 24 Dickinson St.
Samuel Ross McClements, A.B., (*B*) Ireland, 45 O S
Alexander McClorg, A.M., (*B*) Ireland, 45 O S
Duncan Oliver MacKay, A.B., (*Dal*) Nova Scotia, 21 O S
David Charles Mackintosh, A.B., (*Dal*) Nova Scotia, 32 B H
James Mann, A.B., (*T*) Ontario, 23 O S
Thomas Chalmers Marshall, A.B., (*L*) Pennsylvania, 40 B H
George Gregg Mayes, A.B., (*S C*) South Carolina, 47 B H
Lewis Seymour Mudge, A.B., (*P*) New Jersey, 16 Stockton St.
Fred Neher, A.B., (*P*) New York, 7 Edwards Pl.
Henry Irwin Nicholas, Pennsylvania, 45 B H
Vandeveer Van Arsdale Nicholas, A.B., (*P*) New Jersey, 78 B H
Samuel John Onque, A.B., (*Li*) New Jersey, 125 Witherspoon St.

James Ossewaarde, A.B., (*Ho*)	Michigan,	27 B H
Homer Putnam, A.B., (*Dal*)	Nova Scotia,	32 B H
Robert McClellan Ramsey, A.B., (*U P*)	Pennsylvania,	14 B H
George Ray, (*R M*)	New Jersey,	39 B H
Albert Reid, A.B., (*P*)	New Jersey,	8 B H
James Marion Robertson, A.B., (*We*)	Pennsylvania,	5 B H
George Livingstone Robinson, A.M., (*P*)	New York,	22 O S
James Robinson, A.B., (*Q*)	Ireland,	38 B H
William Ambrose Shedd, A.B., (*Ma*)	Persia,	14 O S
William Orpheus Shewmaker, A.B., (*Ce*)	Kentucky,	56 B H
Herman Goethe Stoetzer, A.B., (*W V*)	West Virginia,	69 B H
Walter Lee Stewart A.B., (*S W*)	Mississippi,	21 B H
Edward Barth Teis, (*Pk*)	Missouri,	78 B H
Jacob Trompen, (*Ch*)	Michigan,	3 Edwards Pl.
George Bailey Troub, A.B., (*L*)	Pennsylvania,	Refectory
Howard Crosby Warren, A.B., (*P*)	New Jersey,	7 Edwards Pl.
Edgar Morrison Wilson, A.B., (*L F*)	New Jersey,	11 B H
Frank Stiles Woodruff, A.M., (*P*)	New Jersey,	27 O S
Arthur Thomas Young, A.B., (*Pk*)	Missouri,	10 O S
Edward Crawford Young, A.B., (*L*)	Pennsylvania,	21 O S
Oscar Woodward Zeigler, A.B., (*J H U*)	Maryland,	4 B H

NON-RESIDENT GRADUATE STUDENTS.

Edward Bechtel, A.B., (*J H U*)	Mt. Morris, Ill.
Arnold Guyot Cameron, A.M., (*P*)	Oxford, O.
William Mann Irvine, A.B., (*P*)	Lancaster, Pa.
Nathaniel Chamney James, A.B., (*T*)	Halifax, N. S.
John Stevens Parker, A.B., (*P*)	Trenton, N. J.
Ralph Earl Prime, Jr., A.B., (*P*)	Yonkers, N. Y.
William Andrew Robinson, A.M., (*P*)	South Bethlehem, Pa.
Frederick Newman Rutan, A.B., (*P*)	Newark, N. J.
Robert Haldane West, A.M., (*P*)	Beirut, Syria.

GRADUATE STUDENTS, ... 93

ABBREVIATIONS.

A, Adelbert.
B, Assembly's Coll., Belfast.
B C, Baltimore City College.
Bl, Blackburn.
Br, Brisbane
C F, Collège de France.
Ce, Central.
Ch, Christian Reformed School.
Dal, Dalhousie.
Dav, Davidson.
E, Erskine.
H, Harvard.
Ha, Hamilton.
Ho, Hope.
J, St. John's.
J H U, Johns Hopkins.
K, Knox.
L, Lafayette.
Li, Lincoln.
L F, Lake Forest.
M, Macalester.
Mc, Marietta.
M Ag, Michigan Agricultural.
N Y, Univ. of City of New York.
P, Princeton.
Pk, Park.
Pr, Presbyterian, South Carolina.
Ps, Parsons.
Q, Queen's, Belfast.
R, Rochester.
R M., Randolph Macon.
S C, Univ. of S. C.
S W, Southwestern Pres. Univ.
T, Toronto.
U, Union.
U P, Univ. of Pa.
W, Williams.
We, Westminster.
Wo, Wooster.
W J, Wash. & Jeff.
W V, Univ. of W. Va.

STUDENTS IN THE ACADEMIC DEPARTMENT.

SENIOR CLASS.

John Franklin Adams,	Mount Union, Pa.,	84 N E H
Louis Bartholomew Adams,	New York City,	13 N E H
Cornelius Rea Agnew,	New York City,	8 E M W H
George Bliss Agnew,	New York City,	8 E M W H
Wilson Aull,	St. Louis, Mo.,	17 S E
Samuel Harbourne Baldwin,	Newark, N. J.,	9 S E
Maitland Vance Bartlett,	New Richmond, Wis.,	20 Chambers St.
George Orris Bechtel,	Colora, Md.,	12 M A D H
George Jeffery Bergen,	Camden, N. J.,	5 S R H
Jeremiah Sullivan Black,	York, Pa.,	3 S A D H
William Bayard Blackwell,	Trenton, N. J.,	1 W M W H
Asahel Bloomer,	Indianapolis, Ind.,	11 N A D H
Paul Russell Bonner,	New York City,	6 W W H
Curtis Orris Bosserman,	Newport, Pa.,	8 S E H
Willard Hall Bradford,	Dover, Del.,	76 Univ. Pl.
Nathan Thomas Brown,	Millport, O.,	63 U H
William Christy Bryan,	St. Louis, Mo.,	9 W M W H
Charles Renwick Campbell,	Derry, Pa.,	10 S E H
Paul Van Ettan Cary,	Milwaukee, Wis.,	17 W W H
Willie Winfield Casselberry,	Philadelphia,	16 M A D H
Lowrie Childs,	Omaha, Neb.,	D, U H
Theodore Winthrop Church,	Hudson, N. Y.,	2 S A D H
Ernest Bonner Cooper,	Shelbyville, Tenn.,	9 U H
Louis Burton Crane,	Mt. Sterling, Ill.,	15 M A D H
Charles Carroll Dana,	Morrisville, N. Y.,	11 N E
William Leek Davison,	Brooklyn, N. Y.,	8 M A D H
William Russell Deemer,	Williamsport, Pa.,	6 N R H
Claire H. Denman,	Scottsville, N. Y.,	17 N

Alfred Pearce Dennis,	Pocomoke City, Md.,	20 N E H
George Dugan,	Philadelphia,	4 S M R H
James Henry Dunham,	Trenton, N. J.,	6 S R H
Harry Lippie Durell,	Woodstown, N. J.,	17 N E
Samuel Russell Dye,	Trenton, N. J.,	2 N A D H
Elwood Waite Elder,	Warsaw, O.,	5 N E H
Edward Waterman Evans, Jr.,	Trenton, N. J.,	6 S R H
William Littell Everitt,	Jamesburg, N. J.,	12 N E H
Ernest Carson Gibney,	New York City,	2 E M W H
Richard Francis Goldsborough,	Washington, D. C.,	4 U H
Royal Sweetser Goldsbury,	Minneapolis, Minn.,	14 N E H
Clarence McCheyne Gordon,	Fannettsburg, Pa.,	9 S E H
Henry Woodhull Green,	Trenton, N. J.,	31 Univ. Pl.
Benjamin Franklin Hammond,	Syracuse, N. Y.,	40 Nassau St.
Joseph Webb Harper,	Still Pond, Md.,	16 S E
William Post Herrick,	New York City,	7 E M W H
Erskine Hewitt,	New York City,	20 W W H
John Hone, 3d,	Red Bank, N. J.,	13 N E
John Preston Hoskins,	Media, Pa.,	12 M A D H
Charles Fish Howell,	New Brunswick, N. J.,	2 E W H
Charles Marion Jamison,	Greensburg, Pa.,	15 S M R H
David Stuart Dodge Jessup,	Beirut, Syria,	19 N W
Benjamin Franklin Jones, Jr.,	Allegheny, Pa.,	11 E W H
Pringle Carlisle Jones,	South Charleston, O.,	18 U H
Albert Edwin Keigwin,	Wilmington, Del.,	40 Nassau St.
Wistar Morris Kelly,	Portland, Ore.,	2 E M W H
Phineas Barbour Kennedy,	Bridgeton, N. J.,	17 N
David Smith Lansden,	Cairo, Ill.,	6 M A D H
John Carruthers Leach,	Philadelphia,	42 S E H
Edwin Augustus Stevens Lewis,	Hoboken, N. J.,	5 W M W H
Francis Ernest Lloyd,	Philadelphia,	
Richard Bruff Lyon,	Morristown, N. J.,	5 E W H
Glenn Ford McKinney,	Titusville, Pa.,	6 N R H
George Stewart McLean,	Shippensburg, Pa.,	9 N M R H
Thomas Ferguson McNair,	Hazleton, Pa.,	8 N R H
Hugh McNinch,	Grovania, Pa.,	32 N E H
John Fleming Main,	Seaton, Ill.,	49 Prospect Ave.

James Alexander Matheson,	Philadelphia,	2 S E H
James Cowden Meyers,	Columbia, Pa.,	16 M A D H
Homer Ramsdell Miller,	Amity, N. Y.,	4 N W
Mushegh Minas Minassian,	Constantinople, Turkey,	27 S E H
Franklin Thomas Moore,	Bridgeton, N. J.,	15 N E H
John Cameron Motter,	New Buffalo, Pa.,	13 N
Archibald Gordon Murray,	New York City,	5 W W H
Benjamin Markley Nyce,	Clarksburg, Ind.,	4 N E H
Samuel Grant Oliphant,	Woodstown, N. J.,	60 Univ. Pl.
Otto Alvin Ormond,	Elderton, Pa.,	4 N W
Franklyn Paddock,	New York City,	7 W W H
Henry Page, Jr.,	Princess Anne, Md.,	18 M A D H
George Jacobs Parker,	Mifflintown, Pa.,	19 U H
William Macready Parker,	Oil City, Pa.,	17 N E
George Stevenson Patton,	Princeton, N. J.,	Prospect
Harmar Denny Paxton,	Princeton, N. J.,	2 E W H
Frank Hervey Payne,	Titusville, Pa.,	11 N E
Nelson Lane Petty,	Trenton, N. J.,	1 W M W H
Edgar Allan Poe,	Baltimore, Md.,	5 W M W H
Daniel Warren Poor, Jr.,	Philadelphia,	25 M A D H
Benedict Lincoln Prieth,	Newark, N. J.,	9 S E
Frank Webster Propst,	Albany, Ore.,	13 N
Charles Elbert Rhodes,	So. Schodack, N. Y.,	14 N M R H
William Richards Ridington,	Lansdale, Pa.,	3 S E
Michael Francis Riley,	Morristown, N. J.,	39 S E H
Robert Swan Robertson,	Cortland, N. Y.,	12 S M R H
Harry Porter Robinson,	New York City,	8 N R H
Joseph Haswell Robinson,	New York City,	11 Dickinson St.
Thomas Hastings Robinson, Jr.,	Allegheny, Pa.,	19 S E
Joseph Stockton Roddy,	New Bloomfield, Pa.,	130 Nassau St
Samuel Semple,	Philadelphia,	B, U H
Charles Arthur Sidler,	Danville, Pa.,	35 N E H
John Cutler Shedd,	Oroomiah, Persia,	25 N
George Howell Shields, Jr.,	St. Louis, Mo.,	24 M A D H
William Cornman Spicer,	Harrisburg, Pa.,	27 M A D H
Arthur Willing Spruance,	Wilmington, Del.,	10 M A D H
George Herbert Stephens,	Montrose, Pa.,	7 S A D H

James Weaver Sterry,	New York City,	3 W M W H
Charles Smith Stevens,	Cape May City, N.J.,	21 M A D H
Robert Stuart Stewart,	Detroit, Mich.,	5 M A D H
Robert Boorman Strong,	New Brunswick, N.J.,	2 W W H
Ambrose White Vernon,	Morristown, N. J.,	B, U H
Harwood Vernon,	Summit, N. J.,	14 W W H
George Riddle Wallace,	Bellevue, Pa.,	22 M A D H
Robert Benson Wallace,	Harrisburg, Pa.,	9 E M W H
James Hitchcock Wardwell,	South Orange, N. J.,	13 W W H
Samuel Wasson,	Philadelphia,	1 N E H
James Gillespy Carson Webster,	Xenia, O.,	230 Nassau St.
George Wheeler,	Phoenixville, Pa.,	2 N A D H
Charles Dunning White,	Summit, N. J.,	10 N E
William Silas Whitehead,	Newark, N. J.,	19 S W
Alan Dickson Wilson,	Philadelphia,	2 S A D H
Lawrence Crane Woods,	Sewickley, Pa.,	A, U H
Alfred Beaver Yeomans,	Orange, N. J.,	19 N E H

SENIORS . . . . . 119.

JUNIOR CLASS.

Lucien Abrams,	Dallas, Texas,	11 S M R H
Alonzo Anderson Alter,	Parnassus, Pa.,	33 Chambers St.
James Purviance Atkinson,	Princeton, N. J.,	10 S E
Frederick Randolph Bailey,	Elizabeth, N. J.,	20 M A D H
Thomas Barclay,	Greensburg, Pa.,	8 N M R H
Imlay Benet,	Brooklyn, N. Y.,	14 & 15 U H
Robinson Potter Dunn Bennett,	Garden City, L. I.,	20 N W
Martin Voorhees Bergen, Jr.,	Camden, N. J.,	5 S R H
John William Rufus Besson,	Hoboken, N. J.,	8 E M W H
Leonidas Huston Besson,	Hoboken, N. J.,	8 E M W H
Frederick Gregory Betts,	Clearfield, Pa.,	3 E W H
George Whitefield Betts,	Englewood, N. J.,	6 N E
William Edward Biederwolf,	Monticello, Ind.,	9 N R H
Cassius Edwin Bixler,	Eshcol, Pa.,	16 N
William Little Bradley,	Middletown, N. Y.,	12 S A D H
John Menifee Brennan,	Paris, Ky.,	14 N A D H
James Chester Brewster,	Newark, N. J.,	24 S E H

William Sanderson Brown,	New York City,	17 U H
Frederick Bucher,	Columbia, Pa.,	12 N E
George William Burleigh,	Great Falls, N. H.,	1 E M W H
Courtlandt Patterson Butler,	Blairstown, N. J.,	26 Steadman St.
Howard Crosby Butler,	New York City,	7 N R H
Duncan Campbell,	Caledonia, N. Y.,	1 S M R H
Herbert Swift Carter,	Orange Valley, N. J.,	8 W M W H
Marshall Andrews Christy,	Sewickley, Pa.,	14 S A D H
Alonzo Church,	Washington, D. C.,	23 S E H
Elmer Baldwin Cole,	Windsor, N. J.,	27 Vandeventer Ave.
Varnum Lansing Collins,	Washington, D.C.,	12 Stockton St.
Leon Martin Conwell,	Philadelphia,	80 U H
Pierre Frederick Cook,	Waterloo, N. J.,	10 S M R H
Richard Coulter, Jr.,	Greensburg, Pa.,	1 N A D H
Harry Franklin Covington,	Snow Hill, Md.,	7 S A D H
Milton Boyd Craighead,	Richmond, Ind.,	13 M A D H
Herman Stearns Davis,	Milford, Del.,	13 S E
James Lucas DeLong,	Lexington, Ky.,	5 S E
Robert Denniston,	Philadelphia,	14 N E
Edward Dickinson Duffield,	Princeton, N. J.,	23 Univ. Pl.
John Tathem Dunn,	Wilkes-Barre, Pa.,	10 N
Harry Slawson Dunning,	Middletown, N. Y.,	26 N
Smith Gardner Dunning,	Mechanicstown, N. Y.,	26 N
Albert Frost Earnshaw,	Lowville, N. Y.,	13 N M R H
John William Easton,	Princeton, N. J.,	47 Univ. Pl.
Marcus Stults Farr,	Cranbury, N. J.,	25 N E H
Max Farrand,	Newark, N. J.,	19 W W H
John Montgomery Gaston,	East Liverpool, O.,	73 U H
Herbert Budd Gibby,	Princeton, N. J.,	194 Nassau St.
Andrew Caldwell Gray,	Wilmington, Del.,	5 S W
Le Roy Gresham,	Baltimore, Md.,	6 N W
Henry Ewing Hale, Jr.,	Princeton, N.J.,	26 Prospect Ave.
Frank Hillman Hall,	Washington, D. C.,	7 N M R H
Howland Hanson,	Key East, N. J.,	27 Vandeventer Ave.
William Harris, Jr.,	Princeton, N. J.,	245 Nassau St.
Charles Delucena Hart,	Philadelphia,	6 E M W H
Henry Clay Havens,	Toms River, N. J.,	16 N

Clarence Winants Hillyer,	Bergen Point, N.J.,	20 Chambers St.
Caspar Wistar Hodge, Jr.,	Princeton, N. J.,	60 Stockton St.
James Frederic Hosford,	Kinderhook, N. Y.,	18 E W H
Robert Pollock Howie,	Westfield, Mass.,	27 N E H
George Augustus Hulett,	Russell, Kan.,	62 Canal St.
Samuel Craig Huston,	Philadelphia,	2 N E
Thomas Smith Irvin,	New York City,	14 S E
James Peter King,	Galt, Ontario,	18 S M R H
John Benem Kouwenhoven,	Flatbush, L. I.,	23 M A D H
Preston Stewart Krecker,	Fredericksburg, Pa.,	3 S W
Finley Hall Lloyd,	Pittsburg, Pa.,	11 & 12 U H
Lorenzo Grenville Lyon,	Bridgeton, N. J.,	4 N E
Irvine McColl,	Caledonia, N. Y.,	1 S M R H
Harry Fleming McDowell,	Connellsville, Pa.,	64 & 65 U H
Alan Cassilis McIlvaine,	Vincennes, Ind.,	2 S E
Austin McLanahan,	Chambersburg, Pa.,	13 S E H
Clarence Arthur McWilliams,	Brooklyn, N. Y.,	4 W W H
John Maclean Magie,	Paterson, N. J.,	18 N E
Albertus McLaren Marshall,	Dayton, O.,	20 N W
John Mills Mayhew,	Beatrice, Neb.,	19 Vandeventer Av.
Elmer Llwellyn Meyers,	Ackermanville, Pa.,	3 S W
Frank Montgomery Milligan,	Newport, Pa.,	12 N M R H
Levi Mogel,	Bernville, Pa.,	14 M A D H
Theodore Wilson Morris,	Freehold, N. J.,	5 E M W H
Charles Ogden Mudge,	Princeton, N. J.,	16 Stockton St.
William Leroy Mudge,	Princeton, N. J.,	16 Stockton St.
William Belfrage Parsons,	New York City,	4 S E
George Wilson Peddie,	Philadelphia,	20 E W H
Warrington Walworth Periam,	Newark, N. J.,	13 N A D H
Bowdre Phinizy,	Augusta, Ga.,	14 S M R H
William Kelly Prentice,	New York City,	17 M A D H
John Luther Rankin,	Newark, N. J.,	9 N A D H
Charles Ellet Rieman,	Baltimore, Md.,	18 W W H
Alfred Randolph Riggs,	Baltimore, Md.,	14 S A D H
Jesse Bright Riggs,	Baltimore, Md.,	7 W M W H
John Sinclair Roberts, Jr.,	Bellefonte, Pa.,	42 N E H
Joseph Mitchell Shellabarger,	Topeka, Kan.,	71 U H

Charles Henry Shick,	Reading, Pa.,	12 S E
Ralph Duffield Small,	Boston, Mass.,	10 N R H
Franklin Smiley,	Philadelphia,	80 N E H
William Watson Smith,	Hollidaysburg, Pa.,	5 N A D H
Charles Philip Spooner,	Hudson, Wis.,	9 S R H
Robert Alston Stevenson,	Lewistown, Pa.,	5 N R H
John William Stork,	Baltimore, Md.,	2 N W
Irving Whitall Street,	Lima, O.,	32 U H
William Stump,	Bel Air, Md.,	2 W M W H
Joseph Gaston Symmes,	Cranbury, N. J.,	17 N E H
Charles Irvin Truby,	Steelton, Pa.,	38 S E H
John Van Ness,	Johnsonburg, N. J.,	40 S E H
Peter Vredenburgh,	Freehold, N. J.,	17 E W H
Williamson Updike Vreeland,	Rocky Hill, N. J.,	41 S E H
Frederick Clifford Ward,	Croton, N. Y.,	1 N E
Crowley Wentworth,	Randolph, N. Y.,	17 W W H
James Westervelt,	New Brighton, S. I.,	6 N M R H
Benjamin Vroom White,	Summit, N. J.,	10 N E
Calvin Wight,	New Hamburgh, N. Y.,	5 S A D H
Edward Van Dyke Wight,	New Hamburgh, N. Y.,	5 S A D H
Jesse Lynch Williams,	Princeton, Ill.,	5 N R H
John Glover Wilson,	Baltimore, Md.,	10 N R H
Percy Wilson,	Ft. Missoula, Mont.,	20 Chambers St.
Clinton Tyler Wood,	Fargo, N. Dak.,	4 S E
Richard Flavel Woods,	Philadelphia,	11 S W
Walter Livingston Wright, Jr.,	Imlaystown, N. J.,	2 N W
Alexander Oliver Young,	Newton, N. J.,	3 N A D H
Lawrence Andrew Young,	Louisville, Ky.,	15 N E

JUNIORS, ... 119

SOPHOMORE CLASS.

Abram Piatt Andrew, Jr.,	La Porte, Ind.,	21 Chambers St.
Charles Hart Angell,	Passaic, N. J.,	9 N W
William Osborn Baker,	Princeton, N. J.,	22 Stockton St.
Horatio Stockton Beach,	Palatine Bridge, N. Y.,	3 N M R H
Lee Clark Beatty,	Allegheny, Pa.,	62 Canal St.

James Beveridge,	Scotch Bush, N. Y.,	20 N E
James Drake Black,	New York City,	6 S E
Hamilton Bogue,	Chicago,	H, U H
Frederick Adolph Borcherling,	Newark, N. J.,	35 Univ. Pl.
Henry Wilson Bridges,	Ogdensburgh, N. Y.,	5 N E
James Henry Britton, Jr.,	Denver, Col.,	11 W W H
Isaac Irving Brokaw,	New York City,	8 E W H
†Kenneth Brown,	Brooklyn, N. Y.,	9 N R H
Joseph Hervey Buchanan,	Pemberton, N. J.,	93 Canal St.
Richard Vaux Buckley,	Philadelphia,	16 N W
Archibald Johnston Buist,	Charleston, S. C.,	1 S E H
Isaac Wingerd Byers,	Five Forks, Pa.,	2 N R H
James Donald Cameron,	Round Hill, N. S.,	19 N E
Charles Underwood Carpenter,	Dayton, O.,	2 S W
Jesse Benedict Carter,	New York City,	12 S E H
George Warren Case, Jr.,	Jersey City, N. J.,	17 & 20 S E H
Jefferson Paul Chandler,	St. Louis, Mo.,	12 S W
Arthur Hutchins Cilley,	New York City,	13 N W
Woodford Clay,	Paris, Ky.,	39 U H
Samuel Cochran,	Morristown, N. J.,	21 N E H
Walter Halsted Condict,	Newark, N. J.,	11 N E H
Harrison Roberts Daniels,	Dayton, O.,	38 U H
Parke Hill Davis,	Jamestown, N. Y.,	2 S W
Joseph Albert Dear, Jr.,	Jersey City, N. J.,	L, U H
Constant Lincoln DeWitt,	Deckertown, N. J.,	3 N E H
William Gordon Dice,	Xenia, O.,	230 Nassau St.
Frank Eugene Dill,	Richmond, Ind.,	24 Chambers St.
John Nevius Dodd,	Garfield, N. Y.,	7 N E H
William Henry Dodd,	Garfield, N. Y.,	7 N E H
Robert Driscoll, Jr.,	San Antonio, Tex.,	12 S W
Ellsworth Dwight,	Plainfield, N. J.,	27 N
John Easton,	Allegheny, Pa.,	M, U H
Frederick Stanton Elder,	Winfield, Kan.,	62 Canal St.
George Erdman,	Asheville, N. C.,	24 Chambers St.
Wilson Ferguson,	Reading, Pa.,	4 S R H
William Louis Freund,	Princeton, N. J.,	32 Vandeventer Ave.

†Not fully examined.

George Larcombe Garmany,	Savannah, Ga.,	19 S M R H
Charles Travers Grant,	Cuyahoga Falls, O.,	10 N M R H
John Cleve Green,	Trenton, N. J.,	85 Univ. Pl.
Everette Lent Greene,	Cold Spring, N. Y.,	41 N E H
William Alexander Guild,	Gallatin, Tenn.,	11 W W H
Henry Galloway Comingo Hallock,	Steubenville, O.,	11 Edwards Pl.
Marshall Harrington,	Logan, O.,	73 U H
Horace Lyman Brown Henderson,	Cassville, Pa.,	3 N E
Joseph Albright Henry,	Oxford, N. J.,	20 N E
Cortlandt Van Rensselaer Hodge,	Burlington, N. J.,	7 S R H
Charles Stone Hughes,	Bellefonte, Pa.,	3 N E
Frank Martin Hutchinson,	Sewickley, Pa.,	16 U H
William Throckmorton Johnson,	Asbury Park, N. J.,	24 N E H
Augustus Clark Kellogg,	Elizabeth, N. J.,	19 Univ. Pl.
William Day Kellogg,	Elizabeth, N. J.,	19 Univ. Pl.
Philip King,	Washington, D. C.,	33 S E H
Edward Augustus Lawrence,	Charlotte, N. C.,	28 Chambers St.
Felix Hill Lester,	Los Angeles, Cal.,	13 S M R H
Caleb Wheeler Lord,	Lebanon, Pa.,	14 N W
Dwight Mallory Ludington,	Baltimore, Md.,	15 S W
Loren Mill Luke,	Nanticoke, Pa.,	1 S A D H
Benjamin Brandreth McAlpin,	Sing Sing, N. Y.,	35, 36, 37 U H
Alexander McGaffin,	Belfast, Ireland,	15 N M R H
Gardiner Hope Miller,	Roselle, N. J.,	19 Univ. Pl.
James Alexander Miller,	Roselle, N. J.,	19 Univ. Pl.
Luther Reily Moffitt,	Harrisburg, Pa.,	79 U H
Charles Hall Montgomery,	Warsaw, N. Y.,	36 N E H
Lee Montgomery,	Sedalia, Mo.,	70 U H
DuBois Schanck Morris,	Freehold, N. J.,	5 E M W H
George Richards Murray,	Princeton, N. J.,	73 Nassau St.
David Torence Neely,	Honey Grove, Pa.,	39 N E H
Charles Bertram Newton,	Abington, Pa.,	47 Univ. Pl.
Walter Thomas Noble,	Topeka, Kan.,	71 U H
Charles Williams Ottley,	Columbus, Miss.,	28 & 29 N E H
Edward Rush Palmer,	Louisville, Ky.,	7 S W
John Brent Palmer,	Louisville, Ky.,	7 S W
Francis Landey Patton, Jr.,	Princeton, N. J.,	Prospect

William Elmer Pollison,	Waverley Park, N. J.,	17 N W
Harry Otis Pool,	New York City,	4 S A D H
Bertram Van Dyck Post,	Beirut, Syria,	9 N E H
Alexander Couper Proudfit,	Baltimore, Md.,	1 W W H
William James Reid, Jr.,	Pittsburgh, Pa.,	5 N M R H
James Warren Ritchey,	Evansville, Ind.,	25 N
Charles Trowbridge Riggs,	Marsovan, Turkey,	16 S E H
†John Chambers Rodgers,	Philadelphia,	1 N E
Herbert Milton Rogers,	Omaha, Neb.,	6 W M W H
James Slocum Rogers,	Philadelphia,	7 S R H
José Romero,	City of Mexico,	46 U H
William Tufnell Sabine, Jr.,	New York City,	42 Nassau St.
John Summerfield Salter,	Philadelphia,	8 N E
Elmer Krauss Schultz,	Colebrookdale, Pa.,	2 N R H
Edgar Calvin Seibert,	Glen Ridge, N. J.,	21 S E H
Clayton Fenn Sherman,	Davenport, N. Y.,	19 N E
Robert Thomson Sloss,	Plainfield, N. J.,	16 S M R H
William Spiegel,	Newport, Ky.,	22 S E H
Frederick William Stelle,	Trenton, N. J.,	18 S E
Marhsall Thompson,	St. Paul, Minn.,	14 S E H
Edward Yeomans Thorp,	East Orange, N. J.,	9 M A D H
John Lee Tildsley,	Lockport, N. Y.,	15 N M R H
Theodore Baker Turner,	Corning, Iowa,	24 N
†Frank Herbert Wadsworth,	Warsaw, N. Y.,	4 S E H
William Maginnis Washburn,	Saugerties, N. Y.,	3 W W H
Elmer George Wherry,	Peking, China,	1 S E
John Frederick Wherry,	Peking, China,	1 S E
George Emmons White,	Navy Yard, Portsmouth, N.H.,	Edgehill
John Featherer Wilkinson,	Harrisonville, N. J.,	60 Univ. Pl.
Herbert Ludlum Winans,	Jamaica, N. Y.,	58 Univ. Pl.
Robert Kennedy Wurts,	Philadelphia,	14 E W H
Andrew Cutler Wylie,	Brooklyn, N. Y.,	25 S E H
Henry Young, Jr.,	Newark, N. J.,	49 & 50 U H

SOPHOMORES, ... 111

FRESHMAN CLASS.

John Harvey Alexander,	Benton, Tenn.,	25 Canal St.
Yorke Allen,	South Orange, N. J.,	108 Nassau St.
Franklin Morse Archer,	Camden, N. J.,	76 Univ. Pl.
William Park Armstrong, Jr.,	Selma, Ala.,	E, U H
‡Judson Hooker Bailey,	Albany, N. Y.,	19 Vandeventer Ave.
Thomas Fisher Bailey,	Huntingdon, Pa.,	7 N E
Carroll Baldwin,	Baltimore, Md.,	8 N R H
Alexander Benson,	Philadelphia,	47 Univ. Pl.
John Livingston Bissell,	Sioux City, Ia.,	33 Chambers St.
David Blair,	Indiana, Pa.,	9 Park St.
James Robert Blake,	Newark, N. J.,	20 Chambers St.
Philip Paul Bliss, Jr.,	Newark Valley, N. Y.,	78 Canal St.
‡Frank Howard Braislin,	Crosswicks, N. J.,	37 N E H
George Howard Bright,	Pottsville, Pa.,	34 S E H
James Maclin Brodnax,	Mason, Tenn.,	29 N E H
Irving Swan Brown,	Passaic, N. J.,	9 N W
Murray Peabody Brush,	Columbus, O.,	27 Vandeventer Ave.
‡John Ludlow Bushnell,	Springfield, O.,	5 U H
Alden Matthews Califf,	East Smithfield, Pa.,	2 N E H
James Shaw Campbell,	Sewickley, Pa.,	77 U H
Theodore Melville Carlisle,	Newburgh, N. Y.,	28 Chambers St.
Benjamin Franklin Carter,	Montclair, N. J.,	11 Dickinson St.
Charles Merritt Cartwright,	Waynesville, O.,	27 William St.
Albert Roe Chamberlain,	Chester, N. Y.,	15 S E H
Cummings Waldo Cherry,	Pittsburgh, Pa.,	74 U H
James Carpenter Coleman, Jr.,	Goshen, N. Y.,	175 Nassau St.
David Paul Burleigh Conkling,	New York City,	60 U H
Albert Constable, Jr.,	Elkton, Md.,	164 Nassau St.
Thomas Douglas Corry,	Covington, Ky.,	82 Mercer St.
Thomas Creigh,	Omaha, Neb.,	27 Chambers St.
Ulric Dahlgren,	Trenton, N. J.,	31 Univ. Pl.
Francis Walter Daire,	New Brunswick, N. J.,	New Brunswick
Albert Thomas Davis,	East Orange, N. J.,	7 Dickinson St.
Horace Day,	Plymouth, Pa.,	175 Nassau St.

‡On trial.

Larimore Conover Denise,	Omaha, Neb.,	27 Chambers St.
Samuel Dickey,	Oxford, Pa.,	39 Nassau St.
John Moore Dickinson,	Trenton, N. J.,	12 Dickinson St.
George Dickson Edwards,	Pittsburgh, Pa.,	18 & 19 S E H
Paul Erdman,	Morristown, N. J.,	24 Chambers St.
Edwin Platt Essick,	Brooklyn, N. Y.,	32 Vandeventer Ave.
Benjamin Howard Everitt,	Jamesburg, N. J.,	64 Univ. Pl.
Boyd Ross Ewing,	Blairsville, Pa.,	39 Nassau St.
George Leiper Farnum,	Media, Pa.,	16 W W H
‡James Fentress, Jr.,	Chicago,	162 Nassau St.
Herbert Herschel Fisher,	Peoria, Ill.,	185 Nassau St.
Howard Shreve Fisher,	Swissvale, Pa.,	11 N W
William Wolcott Fisk,	Cheshire, Mass.,	19 Vandeventer Ave.
Reuben Jay Flick, Jr.,	Wilkes-Barre, Pa.,	81 U H
William Floyd,	New York City,	19 Univ. Pl.
Grant Colfax Fox,	Cohocton, N. Y.,	197 Nassau St.
Cleveland Frame,	Philadelphia,	86 S E H
Karl George,	Watertown, N. Y.,	138 Nassau St.
‡James Gibson, Jr.,	Salem, N. Y.,	32 Mercer St.
Malcolm Goodridge,	Flushing, N. Y.,	12 Chambers St.
Wyllys King Grier,	Peoria, Ill.,	89 Nassau St.
Joseph Finch Guffey,	Greensburgh, Pa.,	33 N E H
Walter Eugene Gunster,	Scranton, Pa.,	5 Nassau St.
Charles Sumner Havens,	Toms River, N. J.,	38 N E H
Frank Strickler Henderson,	Media, Pa.,	20 Chambers St.
John Dickie Hitchman,	Mt. Pleasant, Pa.,	8 S R H
Alfred Edward Holmes,	Plainfield, N. J.,	63 U H
Charles Grant Hopper,	Philadelphia,	5 S E H
Fisher Howe,	Princeton, N. J.,	144 Nassau St.
Theodore Friend Humphrey,	South Orange, N. J.,	12 Stockton St.
Robert Bonner Jack,	Hazleton, Pa.,	20 S E
Robert Perkins Jack,	Peoria, Ill.,	89 Nassau St.
Oscar Wilde Jeffery,	Washington, N. J.,	1 Nassau St.
Paul Burrill Jenkins,	Sioux City, Ia.,	12 Vandeventer Ave.
Thomas Addison Jenkins,	Brooklyn, N. Y.,	V, U H
Alexander Davis Jenney,	Syracuse, N. Y.,	8 U H
Edward Ford Johnson,	Michigan City, Ind.,	70 U H

Joseph William Lester Jones, East Orange, N. J., 22 Dickinson St.
‡Ernest Farwell Keigwin, Wilmington, Del, 40 Nassau St.
John Miller Kennedy, Pittsburgh, Pa., 86 Nassau St.
Winfield Scott Kennedy, Jr., Covington, Ky., 32 Mercer St.
Samuel Wardwell Kinney, Rome, N. Y., 38 Chambers St.
Henry Seymour Knight, Lansingburgh, N. Y., 27 Chambers St.
Edward Reed Laughlin, Pittsburgh, Pa., 14 N W
Andrew Barent LeMassena, Newark, N. J., 15 N A D H
Robert Wilson Lewis, Portland, Ore., 7 N E
William Gamble Liggett, Pittsburgh, Pa., 112 Nassau St.
George Brown Linnard, Germantown, Pa., 17 U H
Stephen Timothy Lockwood, Buffalo, N. Y., 78 Univ. Pl.
Walter Lowrie, Warrior's Mark, Pa., 53 Univ. Pl.
Paul Hagans Ludington, Omaha, Neb., 24 Chambers St.
William Lloyd McCauley, Stanley, N. Y., 138 Nassau St.
George Merriwether McCampbell, Jr., New York City, 9 Park St.
John Davidson McCord, Allegheny City, Pa., 19 S E
Russle Hindman McCullough, Colora, Md., 168 Nassau St.
Frank Armstrong McCune, Pittsburgh, Pa., 86 Nassau St.
Harlow Comstock McLeod, Brooklyn, N. Y., 76 Univ. Pl.
Robert James McDowell, Connellsville, Pa., 64 & 65 U H
Charles Howard McIlwain, Saltsburg, Pa., 9 Park St.
John Lewin McLeish, Cincinnati, O., 12 Dickinson St.
Harold Dyar McMillan, Detroit, Mich., 7 U H
Shirrell Norton McWilliams, Buffalo, N. Y., S, U H
William Farragut Meredith, New York City, 31 Univ. Pl.
James McCormick Mitchell, Buffalo, N. Y., 53 Univ. Pl.
Charles Frederick Morrison, Princeton, N. J., 2 Nassau St.
John Murdoch, Pittsburgh, Pa., 112 Nassau St.
John Crosby Neely, Chicago, 12 Stockton St.
Horace Franklin Nixon, Woodbury, N. J., V, U H
Horace Dutton Noyes, Kingston, N. Y., 11 Univ. Pl.
Edward Clare Oliver, Springfield, Ill., 1 Nassau St.
Charles Forsyth Patterson, Allegheny City, Pa., 7 Dickinson St.
Edward James Patterson, Plainfield, N. J., 40 U H
Archibald McDowell Pepper, Sardis, Miss., 28 N E H
Thomas Jefferson Perkins, Germantown, Pa., 1 S R H

Edward Charles Petrie,	Plainfield, N. J.,	89 Nassau St.
Robert Kay Portser,	Greensburg, Pa.,	48 U H
Daniel Pratt,	Syracuse, N. Y.,	40 Nassau St.
George Madison Priest,	Henderson, Ky.,	20 S W
Bunyan Kirk Rankin,	Nashville, Tenn.,	28 N E H
Louis Irving Reichner,	Philadelphia,	10 W M W H
Francis Graham Riggs,	Baltimore, Md.,	7 W M W H
Henry Griffith Riggs,	Baltimore, Md.,	7 W M W H
Edward Rutledge Robbins,	North Branch, N.J.,	27 William St.
Ernest Percival Roberts,	Bahamas, W. I.,	26 N E H
Charles Alexander Robinson,	West Hebron, N.Y.,	2 Stockton St.
John Jenkins Robinson,	Academia, Pa.,	40 N E H
Charles Rugh,	Greensburg, Pa.,	28 Chambers St.
Edward Johnson Russell,	Los Angeles, Cal.,	201 Nassau St.
Philip Schieffelin Sabine,	New York City,	42 Nassau St.
James Hastings Scrimgeour,	Brooklyn, N. Y.,	47 Univ. Pl.
William Alfred Sexton,	West New Brighton, N.Y.,	81 Univ. Pl.
Henry Mandelbert Sheldon,	Newark Valley, N.Y.,	78 Canal St.
Frank Clarence Shultis,	Pittsford, N. Y.,	18 N
Frederick Hoffman Smith, III.	Newark, N. J.,	81 Univ. Pl.
Willet Main Spooner,	Hudson, Wis.,	9 S R H
Burton Egbert Stevenson,	Chillicothe, O.,	197 Nassau St.
James Ramsey Swain,	Allentown, N. J.,	64 Univ. Pl.
Robert Otis Swan,	Oyster Bay, L. I.,	47 Univ. Pl.
Edward Thaw,	Pittsburgh, Pa.,	35 Univ. Pl.
Frank Forrester Thompson,	Milroy, Pa.,	175 Nassau St.
Henry Soffe Thompson,	New York City,	9 W M W H
James MacNaughton Thompson,	Albany, N.Y.,	19 VanDeventer Av.
Frederick Jagger Tooker,	E. Orange, N. J.,	22 Dickinson St.
John Harold Turner,	Corning, Ia.,	24 N
Boyd Van Benthuysen,	Albany, N. Y.,	82 VanDeventer Ave.
Nathan Frederick VanHorson,	Mt. Vernon, N. Y.,	47 Univ. Pl.
Frank Phineas Van Syckel,	Princeton, N. J.,	8 Dickinson St.
Arthur Holland Wadsworth,	Warsaw, N. Y.,	4 S E H
George Handy Wailes,	Salisbury, Md.,	89 Nassau St.
David Shove Walton,	E. Orange, N. J.,	10 U H
Charles Roger Watson,	Cairo, Egypt,	82 S E H

James Avis Wentzell,	Woodstown, N. J.,	78 Univ. Pl.
Joe Billette White,	Valley View, N. J.,	47 Univ. Pl.
George Weems Williams,	Baltimore, Md.,	12 Stockton St.
Albert Martin Woodruff,	Brooklyn, N. Y.,	24 Chambers St.
William Ring Woodruff,	Elizabeth, N. J.,	17 N W
Charles Beatty Worden,	Princeton, N. J.,	10 Nassau St.
Edward Henry Wright, Jr.,	Newark, N. J.,	20 U H
Sidney Radwell Yarrow,	Brooklyn, N. Y.,	17 S M R H
Harry Null Yont,	Greensburg, Pa.,	48 U H
Harvey Wade Young,	Newton, N. J.,	3 N A D H

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STUDENTS IN THE JOHN C. GREEN SCHOOL OF SCIENCE.

SCHOOL OF ELECTRICAL ENGINEERING.

Second Year.

William Edward Durell, A.B. (*P*)	Woodstown, N. J.,	2 M A D H
Maurice Oudin, A.B. (*C C N Y*)	New York City,	52 Univ. Pl.

First Year.

Byron Clarke, B.S., (*P*)	Brooklyn, N. Y.,	2 M A D H
William Shubael Conant, A.B. (*P*)	Princeton, N. J.,	9 S A D H
John Paul Conduit, A. B. (*P*)	Nutley, N. J.,	10 S A D H
Charles Hodge, A. B. (*P*)	Wilkes-Barre, Pa.,	10 S A D H
Paul Foster Leach, B. S. (*P*)	Philadelphia,	15 N A D H
Malcolm McLaren, A. B. (*P*)	Brooklyn, N. Y.,	11 S A D H
Joseph Nutley Thomas, A.B. (*P*)	Santa Rosa, Cal.,	19 E W H
Spencer Way, A.B. (*U Ga*)	Savannah, Ga.,	8 Refectory

SENIOR CLASS.

I. Candidates for B. S. II. Candidates for C. E. III. Candidates for E. E.

I.	Edwin A. Dalton,	Le Mars, Ia.,	19 E W H
I.	Radclyffe Furness,	Philadelphia,	9 S W
II.	Arthur Buckingham Gladwin,	Leonia, N. J.,	6 W W H
I.	Edwin Bates Harts,	Springfield, Ill.,	7 M A D H
II.	William Lapidge Hedenberg,	Newark, N. J.,	P, U H
I.	§Russell Lee Jones,	Farmington, Conn.,	9 S W
II.	Curtis Edward Knickerbocker,	Morrisville, N. Y.,	N, U H
I.	Charles Thomas Mixer,	Chicago,	16 Prospect Ave.
II.	Theodore Pesinger Payne,	Sayville, N. Y.,	11 N
I.	John Hutchings Sealy,	Galveston, Tex.,	41 & 42 U H
II.	Charles Edgar Zortman,	Lancaster, Pa.,	11 N M R H

SENIORS, ... 11

§ Not a candidate for a degree with this class.

JUNIOR CLASS.

II.	John Howard Adams,	Brooklyn, N. Y.,	8 W M W H
I.	Benjamin Ames,	Washington, D. C.,	4 E M W H
II.	Chester Baylis,	New York City,	14 N A D H
II.	Arthur Wellman Butler,	Yonkers, N. Y.,	1 S W
II.	‖Orville Platt Curran, Jr.,	Chicago,	7 E W H
II.	Arthur LeGrand Doty,	Orange, N. J.,	1 N W
II.	George Thomas Dunlop, Jr.,	Washington, D. C.,	10 S R H
I.	Edward Ellison,	Kansas City, Mo.,	10 S R H
II.	William Elmer, Jr.,	Trenton, N. J.,	5 S M R H
I.	Evan Morton Evans,	Englewood, N. J.,	5 S W
II.	‖Robert Field,	Atlanta, Ga.,	59 Bayard Ave.
I.	John Young Graham,	Roberts, Wis.,	4 N M R H
II.	‡Charles Van Dyke Gulick,	Princeton, N. J.,	26 Mercer St.
II.	John Hunter Hanna,	Henderson, Ky.,	20 S W
I.	‖Sheppard Homans, Jr.,	Englewood, N. J.,	4 E M W H
II.	Curtis Grubb Hussey,	Allegheny, Pa.,	7 N W
II.	‖William Vail Johnson,	Orange, N. J.,	1 N W
I.	Frederick John Moses,	Trenton, N. J.,	8 S R H
II.	James Porter Parker,	New Orleans, La.,	15 S A D H

JUNIORS, ... 19

SOPHOMORE CLASS.

I.	Walter Monteith Aikman, Jr.,	Brooklyn, N. Y.,	5 N W
I.	Edgar Wright Baird,	Merion, Pa.,	35 Univ. Pl.
I.	Robert Dickson Ballantine,	Newark, N. J.,	3 N M W H
II.	William John Barkley,	New Orleans, La.,	1 U H
II.	Hobart Dominick Betts,	Englewood, N. J.,	6 N E
I.	Wright Bigler,	Clearfield, Pa.,	11 S E
II.	‡William Harman Brown, Jr.,	New York City,	S R, U H
III.	Thomas Christy Chapin,	Montclair, N. J.,	4 N R H
II.	Will Ross Davidson,	Steubenville, O.,	185 Nassau St.
III.	Daniel Clarence Durland,	New York City,	12 E W H
I.	Ogden Matthias Edwards, Jr.,	Pittsburgh, Pa.,	18 & 19 S E H
III.	Albert Egbert,	Franklin, Pa.,	9 N E
I.	Howard Sinnickson Forman,	Jersey City, N. J.,	17 & 20 S E H

‖ Under conditions.

I.	George Corning Fraser,	Washington, D. C.,	7 E M W H
II.	Henry Gregory Granger,	Cartersville, Ga.,	10 W M W H
II.	Keppele Hall,	Trenton, N. J.,	12 Dickinson St.
II.	Allen Harris,	Princeton, N. J.,	245 Nassau St.
III.	Gavin Nelson Houston,	Maplewood, N. J.,	3 S E H
II.	‡Charles Edwin Humphreys,	Bryn Mawr, Pa.,	11 S E
II.	Hurd Clarence Hurd,	San Antonio, Tex.,	8 & 10 N E H
II.	Heber Clyde Inslee,	Newark, N. J.,	15 N W
I.	Kenneth Campbell Kirtland,	East Orange, N. J.,	49 & 50 U H
II.	‡George Klots,	New York City,	15 E W H
I.	Harris Lindsley,	Nashville, Tenn.,	1 E W H
III.	George Macloskie, Jr.,	Princeton, N. J.,	239 Nassau St.
I.	‖Carleton Sayre Mather,	New York City,	13 E W H
II.	John Randolph McAlpin,	New York City,	35, 36 & 37 U H
II.	‖Louis Harry McClumpha,	Amsterdam, N. Y.,	29 S E H
II.	Howard Moore,	Clayton, N. J.,	8 S R H
II.	Robert McGee Mullen,	Indiana, Pa.,	10 S W
II.	‖Harold Griffith Murray,	Flushing, N. Y.,	1 N M R H
II.	Edward Russell Norton, Jr.,	San Antonio, Tex.,	8 & 10 N E H
I.	‡Arthur D'Evereux Parker,	New Orleans, La.,	1 U H
I.	Alexander McAlpin Phillips,	Trenton, N. J.,	9 S M R H
III.	James Ditmars Remsen,	Flatbush, L. I.,	10 W W H
III.	Simeon Harrison Rollinson,	Orange, N. J.,	23 N E H
I.	Pennington Satterthwaite,	Princeton, N. J.,	10 Dickinson St.
III.	Walter Clare Stearns,	New York City,	10 E W H
II.	‡Charles Hodge Stockton,	Princeton, N. J.,	43 Nassau St.
II.	‡John Stockton,	Princeton, N. J.,	98 Mercer St.
II.	Charles Edward Hopkins Sudler,	Philadelphia,	30 S E H
III.	‡Frederick Sheppard Titsworth,	Newark, N. J.,	16 S W
I.	Ralph Herbert Warren,	New York City,	10 E M W H
II.	‖William Butler Woodbridge,	Chicago,	144 Nassau St.
II.	Enrique Ybanez,	City of Mexico,	88 Nassau St.

SOPHOMORES, ... 45

FRESHMAN CLASS.

II.	Frederic Warner Allen,	S. Orange, N. J.,	108 Nassau St.
I.	Edward Hill Baldwin,	Newark, N. J.,	31 Univ. Pl.
II.	James Edward Bathgate, Jr.,	Newark, N. J.,	11 Dickinson St.

III.	Harold MacKnight Beck,	Germantown, Pa.,	1 S R H
II.	Claude Villie Black,	Covington, Ky.,	32 Mercer St.
III.	Richard Walker Bogart, Jr.,	Yonkers, N. Y.,	40 U H
II.	Reginald Edward Bonner,	W. New Brighton, N. Y.,	1 Nassau St.
III.	†Thomas Hamilton Bowes,	Baltimore, Md.,	33 Chambers St.
II.	George Madoc Brinkerhoff, Jr.,	Springfield, Ill.,	1 Nassau St.
I.	†Avery Kirk Brodie,	Caledonia, N. Y.,	168 Nassau St.
II.	Gabriel Scott Brown,	Angels, Pa.,	175 Nassau St.
II.	†Frederick Lemuel Buckelew,	Jamesburg, N. J.,	1 Nassau St.
III.	James Brown Burnet, Jr.,	Newark, N. J.,	11 Dickinson St.
II.	George White Caldwell,	San Antonio, Tex.,	27 Vandeventer Ave.
III.	Horace French Collins,	Washington, D. C.,	12 Stockton St.
II.	†Arthur Coppell,	New York City,	16 U H
I.	†Samuel Hair Curran,	Chicago,	148 Nassau St.
II.	Wilson Kilgore Doty,	Chicago,	22 N E H
III.	John Patterson Duff,	Brooklyn, N. Y.,	45 U H
I.	Walter Gray Elmer,	Trenton, N. J.,	78 Univ Pl.
I.	*William Hall English,	Elizabeth, N. J.,	
I.	George Howard Forsyth,	Chicago,	35 Univ. Pl.
II.	Herbert Jefferson Fraser,	Brooklyn, N. Y.,	68 Univ. Pl.
I.	Charles Edward French,	Amsterdam, N. Y.,	12 Vandeventer Ave.
III.	Charles Dudley Fuller, Jr.,	Morristown, N. J.,	18 N W
III.	Charles Dickey Goldthwaite,	Galveston, Tex.,	31 Chambers St.
II.	‡William James Grandin, Jr.,	Tidioute, Pa.,	45 U H
I.	William Edward Grant,	Summit, N. J.,	45 Nassau St.
I.	Ernest Haas,	Philadelphia,	18 W W H
I.	Edmund Drake Halsey, Jr.,	Rockaway, N. J.,	148 Nassau St.
II.	Edwin Wilson Hammett,	Germantown, Pa.,	U, U H
II.	Howard Heath,	Trenton, N. J.,	86 Nassau St.
I.	Charles Courtenay Hoge,	Brooklyn, N. Y.,	78 Univ. Pl.
II.	Fred Bartlett Howland,	Titusville, Pa.,	16 N E
II.	Harry Allen Howland,	Titusville, Pa.,	16 N E
II.	†Harry Wilson Inslee,	Newark, N. J.,	15 N W

* Died. Nov. 14, 1890.
† Deficient on entrance examinations.
‡ On trial.

II.	Ogden Cheney Johnson,	San Antonio, Tex.,	27 Vandeventer Ave.
II.	Clinton Hall Kearny,	San Antonio, Tex.,	27 Vandeventer Ave.
I.	Frank Leonard Kellog,	Orange, N. J.,	G, U H
I.	Franklin Corning Kenly,	Chicago,	85 Univ. Pl.
I.	James Henry Kenyon,	Waverly, N. Y.,	88 Nassau St.
II.	†John Frederick Kohler,	New York City,	89 Nassau St.
I.	Joseph Tompkins Low, Jr.,	New York City,	31 Univ. Pl.
I.	Charles Stevens Mackenzie,	Brooklyn, N. Y.,	78 Univ. Pl.
I.	†James Arthur Mandeville,	Newark, N. J.,	47 Univ. Pl.
III.	Howard McClenahan,	Port Deposit, Md.,	187 Nassau St.
III.	†Andrew Torrens McCullagh,	New York City,	33 U H
I.	Henry Lyndon McMillan,	Princeton, N. J.,	40 Bayard Ave.
III.	†George Armstrong Mitchell,	Buffalo, N. Y.,	58 Univ. Pl.
I.	Frederick Clark Paulmier,	Madison, N. J.,	24 Chambers St.
I.	†Roy Campbell Pitcairn,	Harrisburg, Pa.,	184 Nassau St.
II.	‡Ernest Shurly Ramsdell,	Germantown, Pa.,	81 N E H
III.	William Johns Read, Jr.,	Cumberland, Md.,	102 Nassau St.
III.	Thomas Riggs, Jr.,	Washington, D. C.,	3 U H
II.	Charles Gustavus Roebling, Jr.,	Trenton, N. J.,	42 Nassau St.
III.	Will Spoor Rogers,	Omaha, Neb.,	6 W M W H
I.	Montgomery Hunt Sicard,	Washington, D C.,	19 Univ. Pl.
III.	‡Herbert Fowler Sill,	Newark, N. J.,	16 Witherspoon St.
II.	Edward Salisbury Smith,	Denver, Col.,	66 U H
II.	Frank Clinton Smythe,	Philadelphia,	T, U H
I.	William Corbit Spruance,	Wilmington, Del.,	164 Nassau St.
II	Richard Alfred Streit,	Newark, N. J.,	47 Univ. Pl.
III.	George Randall Swain,	Newark, N. J.,	11 Dickinson St.
I.	Edwin Garrison Van Cise,	Summit, N. J.,	27 Chambers St.
I.	Edward Seguin Van Duyn,	Syracuse, N. Y.,	197 Nassau St.
I.	John Leslie Voorhees,	Amsterdam, N. Y.,	14 Vandeventer Ave.
III.	Pendleton Gaines Watmough, Jr.,	Philadelphia,	18 N W
II.	†James Long Whitaker,	Philadelphia,	2 U H
III.	Dwight Daniel Willard,	Philadelphia,	148 Nassau St.
II.	David Milne Willard,	Philadelphia,	148 Nassau St.

FRESHMEN, ... 70

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SPECIAL STUDENTS.

NOT CANDIDATES FOR A DEGREE.

Connor Jones Akin,	Columbia, Tenn.,	20 N E H
Edwin Eads Andrews,	Allegheny City, Pa.,	75 U H
Paul Clark Aylesworth,	Council Bluffs, Ia.,	6 E W H
Campbell Elias Babcock,	Chicago, Ill.,	6 N A D H
Henry Bainbridge Baker,	Elizabeth, N. J.,	19 Univ. Pl.
Arthur Denton Ball,	Newark, N. J.,	2 W M W H
Morrison Barclay,	Greensburg, Pa.,	8 N M R H
James Barnes,	New York City,	4 W M W H
James Beck,	Minneapolis, Minn.,	166 Nassau St.
Thomas Bell,	Jersey City, N. J.,	2 S M R H
Charles Edward Boynton, Jr.,	Atlanta, Ga.,	O, U H
Harry Elmer Bierly,	Rebusburg, Pa.,	8 S E
John Miller Bridges,	Carlisle, Pa.,	11 Dickinson St.
Frederick Brokaw,	New York City,	19 M A D H
Arthur Grant Brown,	Woodbridge, N. J.,	7 S E H
Richard Shepard Bryan,	St. Louis, Mo.,	8 S M R H
William Marshall Bullitt,	Louisville, Ky.,	15 N E
Alfred Bangs Carhart,	Brooklyn, N. Y.,	27 William St.
Luther Hanson Cary,	Chicago, Ill.,	2 M A D H
Snyder Hoxie Clark,	St. Louis, Mo.,	14 Vandeventer Ave.
Walter Mack Clark,	Peoria, Ill.,	19 Vandeventer Ave.
Henry Peter Aymus Clausen,	New York City,	15 W W H
Greene Clay, Jr.,	Mexico, Mo.,	44 U H
Edward Field Conover,	Princeton, N. J.,	59 Bayard Ave.
Frederic Hutchinson Cubberley,	Trenton, N. J.,	11 N
George Kidder Davis,	Wilkes-Barre, Pa.,	11 M A D H

Richard Downes,	Philadelphia,	26 S E H
Gaston Drake,	Yalaha, Fla.,	76 U H
Halsey Durand,	Newark, N. J.,	9 E W H
Frank Munson Dusenberry,	New York City,	89 Nassau St.
John Marshall Edgar,	Chambersburg, Pa.,	18 S W
Philemon Aumack Falkinburgh,	Toms River, N. J.,	10 N W
Herbert Payne Fisher,	Philadelphia,	102 Nassau St.
Aaron Ross Force,	Livingston, N. Y.,	206 Canal St.
Halsey Wright Foster,	Pittsburgh, Pa.,	4 S R H
John Gardner Gould,	Newark, N. J.,	C, U H
Christopher Albert Gray,	New York City,	166 Nassau St.
William Allen Hallock,	Steubenville, O.,	11 Edwards Pl.
William Langdon Hayden,	Columbus, O.,	6 S W
Albert Charles Hencken,	New York City,	4 N R H
Robert Hetherington,	Bristol, Pa.,	18 N E H
Clinton Hooven,	Hamilton, O.,	40 U H
Joseph Miller Huston,	Philadelphia,	2 N E
Robert Smith Jamison, Jr.,	Greensburg, Pa.,	28 Chambers St.
Cyrus Church Jefferson,	St. Paul, Minn.,	I, U H
Martin Saxe Kaliske,	New York City,	69 U H
William Burnet Kinney,	Newark, N. J.,	21 Chambers St.
Amos Swinburne Lakey, Jr.,	Chicago, Ill.,	162 Nassau St.
Wilton John Lambert,	Washington, D. C.,	7 N R H
Daniel Weisiger Lindsey,	Frankfort, Ky.,	11 M A D H
Lucius Freeman Little,	Owensboro, Ky.,	61 U H
Malcolm Lloyd,	Philadelphia,	62 U H
John McDowell,	Wyoming, Pa.,	2 Witherspoon St.
Matthew Hodkinson McGee,	Homer, Pa.,	37 S E H
Charles Albert McKenney,	Washington, D. C.,	3 M A D H
William Smith McKinney,	El Paso, Ill.,	19 Vandeventer Ave.
William Chamberlain Marrow,	Baltimore, Md.,	16 E W H
Arthur Henry Maurice,	New York City,	7 S M R H
Frederick Hubbell Mills,	Leon, N. Y.,	28 S E H
Samuel Minot,	East Orange, N. J.,	6 S W
John Montgomery,	Ada, O.,	32 U H
Arthur Gardner Moses,	Trenton, N. J.,	3 S R H
John Murray,	Pittsburgh, Pa.,	4 M A D H
Alfred Moorhead North,	Philadelphia,	47 Univ. Pl.

Calvin Pardee,	Philadelphia,	8 W W H
John Sheldon Paul,	New York City,	9 W W H
William Edward Pearson,	Orange Heights, N. J.,	8 S W
James Wilson Porter,	Sewickley, Pa.,	F, U H
Ralph Raymond Ramsdell,	Germantown, Pa.,	31 N E H
Edward Roderick,	Hazleton, Pa.,	20 S E
Randolph Sailer,	Philadelphia,	108 Nassau St.
Adolph Theodore Schmidt,	Louisville, Ky.,	15 N E
Richard Theodore Shelton,	St. Louis, Mo.,	R, U H
William Mansfield Skiles,	Minneapolis, Minn.,	30 U H
Frank Berkeley Smith,	New York City,	17 S W
Charles Wood Somerby,	Philadelphia,	18 S A D H
Howard Stanton,	Philadelphia,	72 U H
Ralph Taintor,	New York City,	81 S E H
Robert McKean Thomas,	Elizabeth, N. J.,	10 S E
Frederick Crosby Torrey,	Far Rockaway, N. Y.,	1 Edwards Pl.
John Worthington Valliant,	St. Louis, Mo.,	7 N A D H
John Jewell Van Vliet,	Goshen, N. Y.,	22 N E H
Henry Vincent, Jr.,	Danville, Pa.,	25 Canal St.
Robert Anderson Watts,	Louisville, Ky.,	N, U H
John McGill White,	Germantown, Pa.,	89 Nassau St.
Dudley Whitney,	Glassboro, N. J.,	14 W W H
William Griffith Wilson,	Baltimore, Md.,	21 Chambers St.
George Clarence Wintringer,	Steubenville, O.,	7 N W
Lee Barnes Woodcock,	Bellefonte, Pa.,	18 S W
Edward Bell Wright,	Washington, D. C.,	75 U H

SPECIALS, ... 90

GENERAL SUMMARY.

FELLOWS,	8
GRADUATE STUDENTS,	93
ACADEMIC STUDENTS,	504
SCIENTIFIC STUDENTS,	155
SPECIAL STUDENTS,	90
	850

CLASSIFICATION OF UNDERGRADUATES BY RESIDENCE.

New Jersey	193	Colorado	2
Pennsylvania	177	Michigan	2
New York	154	Mississippi	2
Maryland	27	North Carolina	2
Illinois	25	New Hampshire	2
Ohio	24	Alabama	1
Kentucky	17	Connecticut	1
District of Columbia	14	Florida	1
Missouri	11	Montana	1
Indiana	9	North Dakota	1
Texas	9	South Carolina	1
Delaware	7		
Nebraska	7	China	2
Tennessee	7	Mexico	2
Georgia	6	Syria	2
Iowa	6	Turkey	2
Minnesota	5	Egypt	1
Wisconsin	5	Ireland	1
Kansas	4	Nova Scotia	1
California	3	Ontario	1
Louisiana	3	Persia	1
Massachusetts	3	West Indies	1
Oregon	3		749

ABBREVIATIONS.

N, Nassau Hall.
N E, North Entry of East College.
S E, South Entry of East College.
N W, North Entry of West College.
S W, South Entry of West College.
N R H, North Entry of Reunion Hall.
S R H, South Entry of Reunion Hall.
N M R H, North Middle Entry of Reunion Hall.
S M R H, South Middle Entry of Reunion Hall.
E W H, East Entry of Witherspoon Hall.
W W H, West Entry of Witherspoon Hall.
E M W H, East Middle Entry of Witherspoon Hall.
W M W H, West Middle Entry of Witherspoon Hall.
N E H, North Entry of Edwards Hall.
S E H, South Entry of Edwards Hall.
U H, University Hall.
N A D H, North Entry of Albert B. Dod Hall
M A D H, Middle Entry of Albert B. Dod Hall.
S A D H, South Entry of Albert B. Dod Hall.

HONORS AND DEGREES CONFERRED.

DEGREES.

Honorary Degrees, Conferred June, 1890.

LL.D.—Hon. Daniel Gould Fowle, '51, Governor of North Carolina.
Francis H. Snow, Chancellor of the University of Kansas.

D.D. —Rev. Hugh Jones, England.
Rev. Thomas Boyd McLeod, '70, New York.
Rev. George Conrad Yeisley, '70, New York.

Ph.D. —George Eastburn, A.M., Pennsylvania.

A.M. —Phœbus W. Lyon, New Jersey.
Frank S. Presbrey, District of Columbia.

C.E. —William S. Bacot, '81, New Jersey.

Degrees in Course, Conferred June, 1890.

D.Sc. —Dayton Clarence Miller, A.M.—Thesis: Observations of Comet 1889 V and Investigation of its Orbit, with an Ephemeris.

Masters of Arts	25
Masters of Arts on examination	20
Bachelors of Arts	108
Bachelors of Science	11
Civil Engineers	10
Electrical Engineers	8

Degree in Course, Conferred November, 1890.

Ph.D. —Wallace Torrey Chapin, A.B. —Thesis: Evolutionary Ethics.

HONORS—1889-1890.

COMMENCEMENT HONORS. FOR GENERAL EXCELLENCE.

SENIOR HONORMEN.—FIRST GROUP—*Magna cum laude.*

Edward Phillips Burgess, Jr., *Latin Salutatory.*
Robert Porter Shick, *English Salutatory.*
John Morris Yeakle,

SECOND GROUP—*Cum laude.*

Edgworth Bird Baxter,
George Hooper Bigelow,
Ernest Ludlow Bogart,
John Calvin Bucher,
Tileston Fracker Chambers,
William Sanderson Furst,
William Dwight Gibby,
Harlie Wallace Hathaway,
Jacob Benner Hillegas,
Albert Elmer Linder.
Frank Lukens,
Robert Thompson Miller McCready,
Huntington Wolcott Merchant,
Dunlop Moore, Jr.,
Francis Palmer, . . *Valedictory*,
George Louis Shearer,
Morris Crater Sutphen,
James Ditmars Voorhees,
Clark Benedict Williams,
Charles Albert Woods,

SENIOR SPECIAL HONORS.

Mental Science—Edgworth Bird Baxter, George McFarlane Galt, Richard Irvin, Jr. *Political Science and History*—Jacob Benner Hillegas, Robert T. M. McCready, Charles Albert Woods, John Morris Yeakle. *Greek and Latin*—Joseph Reynolds Kerr, Jr., Dunlop Moore, Jr., Robert Porter Shick, Morris Crater Sutphen. *French and German*—Frederick Morton Wall. *English*—Benjamin Haywood Adams, Ernest Ludlow Bogart. *Mathematics and Mathematical Science* — John Paul Conduit, George Bishop Covington, Charles Hodge, Malcolm McLaren, George Lewis Shearer, Clarke Benedict Williams. *Natural Sciences*—Daniel Linn Edsall, James Ditmars Voorhees.

FELLOWS.

(For names of Fellows see page 19.)

SENIOR PRIZEMEN.

ALEXANDER GUTHRIE MC COSH PRIZES.

1st Senior, Edgworth Bird Baxter, Ga.
2d Senior, Frank Lukens, N. J.
Junior, Edward Waterman Evans, N. J.

LYNDE PRIZE DEBATE.

James Jeffries Charlton, Ore., *First Prize.*
John Morris Yeakle, Pa., *Second Prize.*
Edmund Grindall Rawson, Jr., N. Y., *Third Prize.*

DEBATERS.

American Whig Society. *Cliosophic Society.*

James Jeffries Charlton, Ore. Herbert Mortimer Gesner, N. J.
Henry Kreider Denlinger, Pa. Huntington Wolcott Merchant, N. Y.
Edmund Grindall Rawson, Jr., N. Y. John Morris Yeakle, Pa.

BAIRD PRIZEMEN.

The Baird Prize.	Edgworth Bird Baxter, Ga.
In Oratory.	Francis Palmer, Me.
In Delivery.	Walter Lowrie, Pa.
In Poetry.	Harlie Wallace Hathaway, N. J.
In Disputation.	*First*, Robert Thompson Miller McCready, Pa.
	Second, Henry Kreider Denlinger, Pa.

Competitors appointed for Excellence in English Composition: For Baird Prize and Prize for Oratory—E. B. Baxter, E. L. Bogart, T. F. Chambers, W. S. Furst, H. W. Hathaway, F. Lukens, F. Palmer, J. D. Voorhees, J. M. Yeakle. *For Prize for Oratory*—G. H. Bigelow, J. C. Bucher, E. P. Burgess, Jr., J. J. Charlton, G. P. Covington, E. M. Galt, H. W. Merchant, W. C. Prime, G. L. Shearer, R. P. Shick, J. H. Sutton, J. S. Van Cleve.

THE CLASS OF 1859 PRIZE IN ENGLISH LITERATURE.

William Sanderson Furst, Pa., with honorable mention of Harlie Wallace Hathaway, N. J.

THE GEORGE POTTS BIBLE PRIZES.

Not awarded.

THE LYMAN H. ATWATER PRIZE IN POLITICAL SCIENCE.

Joseph William Lewis, Mo.

FREDERICK BARNARD WHITE PRIZE IN ARCHITECTURE.

George Herbert Stevens, Pa.

THEODORE CUYLER PRIZE IN ECONOMICS.

George Bishop Covington, Md.

JUNIOR PRIZEMEN.

Junior First Honor Scholar.

Samuel Grant Oliphant, N. J.

Maclean Prizeman.

George Riddle Wallace, Pa.

Junior Orator Medallists.

George Riddle Wallace, Pa., *First Medal.*
George Jacob Parker, Pa., *Second Medal.*
Pringle Carlisle Jones, O., *Third Medal.*
Samuel Semple, Pa., *Fourth Medal.*

Competing Junior Orators.

American Whig Society.	*Cliosophic Society.*
Pringle Carlisle Jones, O.	Edward Waterman Evans, Jr., N. J.
James Cowden Meyers, Pa.	Mushegh Minas Minassian, Turkey.
George Jacob Parker, Pa.	Samuel Semple, Pa.
George Riddle Wallace, Pa.	George Herbert Stephens, Pa.

DICKINSON PRIZE.

George Herbert Stephens, Pa., with honorable mention of Daniel Warren Poor, Pa.

JUNIOR MATHEMATICAL PRIZES.

1st, John Preston Hoskins, Pa.
2d, Clarence McCheyne Gordon, Pa.
3d, Robert Stuart Stewart, Mich.

THE THOMAS B. WANAMAKER ENGLISH PRIZE.

Samuel Grant Oliphant, N. J.

JUNIOR SPECIAL HONORS.

Philosophy—W. Aull, Mo., E. W. Evans, Jr., N. J., G. S. Patton, N. J., D. W. Poor, Jr., Pa., G. H. Stephens, Pa., A. W. Vernon, N. J. *Political Science*—J. C. Meyers, Pa., G. R. Wallace, Pa. *Classics*—S. G. Oliphant, N. J., G. S. Patton, N. J. *English*—S. G. Oliphant, N. J. *Modern Languages*—C. C. Dana, N. Y., J. P. Hoskins, Pa. *Mathematics*—C. R. Campbell, Pa., C. M. Gordon, Pa., R. S. Stewart, Mich. *Natural Sciences*—F. E. Lloyd, Pa.

JUNIOR HONORMEN.

First Group.

C. R. Campbell, Pa.
J. H. Dunham, N. J.
E. W. Evans, Jr., N. J.
J. P. Hoskins, Pa.
G. F. McKinney, Pa.
J. C. Meyers, Pa.
S. G. Oliphant, N. J.
G. H. Stephens, Pa.
A. W. Vernon, N. J.
C. D. White, N. J.
G. R. Wallace, Pa.

Second Group.

Wilson Aull, Mo.
G. O. Bechtel, Md.
W. B. Blackwell, N. Y.
C. O. Bosserman, Pa.
P. V. Cary, Wis.
Lowrie Childs, Neb.
C. C. Dana, N. Y.
C. H. Denman, N. Y.
A. P. Dennis, Md.
E. W. Elder, O.
W. L. Everitt, N. J.
C. M. Gordon, Pa.
J. W. Harper, Md.
W. P. Herrick, N. Y.
Erskine Hewitt, N. Y.
D. S. D. Jessup, Syria.
D. S. Lansdon, Ill.
J. C. Leach, Pa.
E. A. S. Lewis, N. J.
F. E. Lloyd, Pa.
A. O. Ormond, Pa.
Henry Page, Jr., Md.
G. S. Patton, N. J.
H. D. Paxton, N. J.
F. H. Payne, Pa.
N. L. Petty, N. J.
E. A. Poe, Md.
D. W. Poor, Jr., Pa.
F. W. Propst, Ore.
C. E. Rhodes, N. Y.
A. W. Spruance, Del.
R. S. Stewart, Mich.
Samuel Wassan, Pa.
George Wheeler, Pa.
L. C. Woods, Pa.
A. B. Yeomans, N. J.

JUNIOR HONORMEN, SCHOOL OF SCIENCE.

B. S. Course—J. H. Sealy, Tex. *C. E. Course*—T. P. Payne, N. Y.

SOPHOMORE PRIZEMEN.

THE CLASS OF 1861 PRIZE.

Walter Livingston Wright, Jr., N. J.

FRANCIS BIDDLE PRIZE.

Caspar Wistar Hodge, Jr., N. J.

CLASS OF 1876 PRIZE FOR DEBATE IN POLITICAL ECONOMY.

Bowdre Phinizy, Ga.

SOPHOMORE HONORMEN.

First Group.

Le Roy Gresham, Md.,	Lawrenceville School.
J. P. King, Ont.,	Delaware Academy, Delhi, N. Y.
Bowdre Phinizy, Ga.,	Webb Brothers' Classical School, Bell Buckle, Tenn.
W. K. Prentice, N. Y.,	Mr. D. S. Everson's School, 34 West 40th Street, N. Y.
P. K. Satterfield, Pa.,	Mr. Alonzo Brown's School, Philadelphia.
C. T. Wood, N. D.,	Presbyterian Coll., Jamestown, N. D.

Second Group.

G. W. Betts, N. J.,	Mr. W. W. Smith's Class. and Math. School, Englewood, N. J.
J. C. Brewster, N. J.,	Newark Academy, Newark, N. J.
E. B. Cole, N. J.,	Peddie Institute, Hightstown, N. J.
A. F. Earnshaw, N. Y.,	Princeton Preparatory School, and Dr. Mudge, Princeton.
Max Farrand, N. J.,	Newark Academy, Newark, N. J.
H. C. Havens, N. J.,	Peddie Institute, Hightstown, N. J.
C. W. Hodge, Jr., N. J.,	Messrs. Pierson, '82, and Erdman, '86.
L. G. Lyon, N. J.,	Morris Academy, Morristown, N. J.
J. M. Magie, N. J.,	Mr. J. D. Donnell, Paterson, N. J.
W. B. Parsons, N. Y.,	Delaware Lit. Institute, Franklin, N. Y.
J. M. Shellabarger, Kan.,	Kansas State Univ., Lawrence, Kan.
J. W. Stork, Md.,	Baltimore High School, and Professor George Witte.
John Van Ness, N. J.,	Blair Presbyterial Acad., Blairstown, N. J.
W. U. Vreeland, N. J.,	Princeton Preparatory School.
James Westervelt, N. Y.	St. Paul's School, Concord, N. H.
B. V. White, N. J.,	Morris Academy, Morristown, N. J.
W. L. Wright, Jr., N. J.	Van Rensselaer Sem., Burlington, N. J.

SOPHOMORE SPECIAL HONORS.

Latin—A. F. Earnshaw, N. Y., C. W. Hodge, Jr., N. J., B. Phinizy, Ga., C. T. Wood, N. D., W. L. Wright, Jr., N. J. *Greek*—W. K. Prentice, N. Y. *Mathematics*— C. E. Bixler, Pa., J. C. Brewster, N. J., J. W. Easton, N. J., A. C. Gray, Del.,

R. P. Howie, Mass., W. K. Prentice, N. Y., P. K. Satterfield, Pa., J. W. Stork, Md., John Van Ness, N. J., James Westervelt, N. Y. B. V. White, N. J., E. V. Wight, N. Y., W. L. Wright, Jr., N. J. *French*—R. P. D. Bennett, N. Y., G. W Betts, N. J., V. L. Collins, D. C., M. S. Farr, N. J., Le Roy Gresham, Md. *German*—G. W. Betts, N. J., W. S. Bradley, N. Y., P. F. Cook, N. J., M. S. Farr, N. J., M. Farrand, N. J., Le Roy Gresham, Md., J. P. King, Ont., L. G. Lyon, N. J., J. M. Magie, N. J., W. U. Vreeland, N. J.

SOPHOMORE HONORMEN, SCHOOL OF SCIENCE.

B. S. Course—E. M. Evans, N. J., Mr. E. H. Pershing, '86.

C. E. Course—1st, A. L. Doty, N. J., Newark Academy, Newark, N. J.

2d, G. T. Dunlop, Jr., D. C., Wash. & Lee Univ., and Epis. High School of Va.

Stinnecke Scholar.

Jesse Benedict Carter, N. Y.

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Cortlandt Van Rensselaer Hodge, N. J.

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First Group.

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J. S. Rogers, Pa.,	The Hamilton School, W. Philadelphia.
J L. Tildsley, Pa.,	Mt. Hermon School, Northfield, Mass.
H. L. Winans, N. Y.,	The Pingry School, Elizabeth, N. J.

Second Group.

J. H. Buchanan, N. J.,	Peddie Institute, Hightstown, N. J.
George Erdman, N. C.,	Ravenscroft High School, Asheville, N. C.
C. T. Grant, O.,	Western Reserve Acad., Hudson, O.
C. B. Newton, Pa.,	Lawrenceville School.

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F. W. Stelle. N. J.,	Model School, Trenton, N. J.
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	H. S. Forman, N. J.,	Hasbrouck Institute, Jersey City, N. J.
4.	C. E. H. Sudler, Pa.,	Swarthmore College.
5.	K. Hall, N. J.,	Model School, Trenton, N. J.

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ALBANY FRESHMAN ENTRANCE PRIZE.

Boyd Van Benthuysen, N. Y.

Preliminary Prize not awarded.

CHICAGO FRESHMAN ENTRANCE PRIZE.

John Crosby Neely, Ill.

WILKES-BARRE FRESHMAN ENTRANCE PRIZE.

Horace Day, Pa.

PITTSBURGH FRESHMAN ENTRANCE PRIZE.

George Dickson Edwards, Pa.

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155 So. 8d St., Brooklyn, N. Y.

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Secretary, HIRAM WOODS, JR., M.D., '79,
525 N. Howard St., Baltimore, Md.

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Secretary, THOMAS W. PEEBLES, Esq., '82, Minneapolis, Minn.